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Educational Opinion.

THE school medical officers authorised by the Act of 1907 form the subject of a circular (596) just issued from Whitehall. Here their functions are particularised, and the intentions of the Board of Education respecting the part they will play in the educational scheme made clear. The Board suggest that in each area a fully-qualified school medical officer should be appointed, who should have complete control of the arrangements made for medical inspection, hygienic investigation, and advisory functions, and should be assisted by a qualified and suitable staff, including assistant medical officers, school nurses, attendance officers, and teachers. When the multifarious responsibilities of the "school doctor" as set forth in Circular 596 are understood, the suggestion concerning an ample and suitable staff is recognised as very necessary. For the medical inspection of school children forms but a small part of this new province, into which falls everything that trenches on hygiene, health, personal well-being, and suitability of school arrangements.

The School Doctor.

THE annual report which the "doctor" will be called on to furnish every Christmas threatens to be an imposing affair, and in course of time it will be a document of the greatest value. For these reports will soon furnish statistics concerning the physical condition of all children of school age in the primary schools of the country, and even the uninitiated may be able to understand the importance of such a barometer of the nation's health. With much wisdom the Board do not at present insist on uniformity in the preparation of these reports, preferring to wait until practical experience has made clear what particular form of official table will be applicable to all parts of the country and all varieties of circumstances. *Festina lentè* is a good motto in this case. But it is in Section D of the circular, treating of "Arrangements for Attending to the Health and Physical Condition of School Children," that light is thrown on the far-reaching possibilities for good of this new health department.

A Health Barometer.

THE school doctor will advise in the improvement of old and the provision of new buildings; on ventilation and desk fittings, doubtless with arguments drawn from the evil examples which yet abound; on lighting and everything which affects the eyesight—even to the type of the readers and the quality of the sewing; on physical exercises, with comparisons drawn from varied systems and varied schools; on open-air classes, camps, and schools; on swimming as an exercise, and the provision of baths: in fact, there is no corner of school life in which a child's health may suffer which will escape the eye of the "doctor" and his assistants. Naturally the arrangements for the care of blind, deaf, and physically or mentally defective children fall into his department; and out of the fullness of the knowledge gathered by his staff, he will be able to advise the Authority as to the necessity of providing meals for necessitous children. The circular also foresees and provides for the appointment of school nurses, for the provision of spectacles, for contributions to hospitals and dispensaries, and for the institution of school clinics. These follow logically. For, as we remarked when the medical inspection of schools was first instituted, there can be no hanging back. Inspection was the first step: that taken, the rest follow. Circular 596 is a tremendous step in advance both for school and nation.

A Medical "Deus ex Machinâ."

NEVER was there such a year as 1908. We have counted already no fewer than *eight* great Congresses which have been held in London, most of them highly interesting, and September will see yet another at the London University, on Moral Education. Then and there every aspect of moral instruction and education will be discussed by a galaxy of educational experts drawn from many lands. The list of vice-presidents is sufficiently imposing, and among those who will take part in initiating discussion are Messrs. Adams, Lloyd Morgan, Mackenzie, and Muirhead from England; Adler and Peabody from America; Lombroso from Italy; Buisson, Boutroux, and Seailles from France; Munch, Förster, and Tonnies from Germany; Kovalevsky from Russia; Kármán and Schneller from Hungary. Specimen lessons in Moral Instruction will be given in English, French, and German by well-known teachers; and some of the topics put down for treatment are full of interest. Altogether a notable gathering.

A Moral Congress.

WE would remind our readers that the dates are September 25–29; the place, London University; the membership fee, half a guinea for the public, and 7s. 6d. for teachers; the office of the Congress, 13 Buckingham Street, Strand, where full information can be obtained from Mr. Gustav Spiller, the general secretary. Speaking of congresses, we are reminded of a remark made to us when taking part in a huge representative gathering of teachers in Paris. We could not help admiring the vivid eloquence of the speakers, when a lively-witted French lady observed, "Ah, oui! Dans ce pays on commence tout[illegible] par la parole: l'action suit[illegible]." "La parole" promises to be unusually brilliant at the Moral Education Congress; let us hope that "l'action" will follow *inevitably*.

How to get there.

THE question of the admission or exclusion of children under five years of age has often been discussed without much progress being made; but the report of the Committee appointed by the Board of Education to consider the matter indicates that it may soon be settled. The Committee recognise that home ought to be the place for these toddlers, but at the same time recognise that in vast numbers of cases home is just the reverse. They recommend, therefore,

Enter—the Nursery.

that nursery schools should be formed and staffed by teachers who have been specially instructed in methods of dealing with little ones, and who are full of sympathy with child life. The nursery school should be a real child garden, with no formal lessons, but plenty of opportunity for play and sleep; well lighted, ventilated, and warmed, so that the human plants may healthily develop, watched over by teachers and attended by nurses. How necessary some such action is can be seen from the fact that nearly half a million babies between the ages of three and five were in the schools last school year, forming part of the charge of infants' school mistresses. One recommendation of the Committee is admirable, namely, that the present size of infants' classes should be reduced to a maximum of thirty; and every one will be glad to hear that they also condemn the gallery on which so many thousands of tiny ones are condemned to perch for hours daily. Scaffolds of this kind make excellent firewood.

IN connection with the report of this Committee, there are remarks in the report of the Royal Commission on the Care and Control of the Feeble-Minded which are very pertinent. The Commissioners speak of the neglect of young children in the great industrial centres, the evil effect on their development of malnutrition, and of the solitude in which the little ones are left by mothers who are engaged in factories. "At four, five, or six years of age they are often unable to talk, knowing and understanding nothing.....The children are left at home, shut up for many hours; all day they have no one to talk to or play with. That they should be slow in developing is small wonder." This report does but strengthen the recommendation of the Departmental Committee. It is better for the nation that money should be spent on the half million or so of tiny children in schools to ensure their decent development than that a large percentage of them should ultimately find their way into the schools for the feeble-minded. That is a double loss which the country can ill afford. The advent of the nursery school may perhaps be hastened by the findings of the Royal Commission.

How Feeble Minds are made.

CIRCULAR 597, issued in August, explains the attitude of the Board of Education towards the student-teachers who were called into being in 1907, and are about to enter on the year of student-teachership. As we explained at the time, they are to count on the staffs of the schools to which they may be allocated for an average attendance of forty-five scholars. The circular is express in detailing the kind of school to which they may be attached, the form of supervision to which they are to be subjected, and the gentle induction into the art of managing a class which they are to undergo. There is much sound sense in the advice that the student-teacher should not be expected to attend courses of lectures on psychology and pedagogy, the child mind and the like, and throughout the circular there is an air of fatherly solicitude for this bantling that is quite pathetic. One would almost infer that the person who is responsible for the existence of this creature is in mortal doubt as to the future of his progeny, there are so many "ifs" and safeguards in the circular.

The Student-Teacher again.

SECTION 8, which treats of "General Education," has quite a thrill of doubtful fear in it, with which feeling we quite sympathise. "The student-teacher.....will not have a large amount of available time in which to continue his general education after his school-work and his reasonable recreation have been provided for," says the circular. We echo, "He won't!" And it goes on to recommend desultory reading "at the dictates of individual taste" as the best means of continuing his general education. Section 8 indicates the weak spot in the new creation. The wisdom of the regulation and the success of the student-teacher are secured—*if* a youth has finished the indispensables of a liberal education at the age of seventeen; and *if* he can undertake the greater part of a week's work at teaching and still have energy to continue his own education, supposing he still has the will to do so; and *if*— But why go on? The thing is absurd. The student-teacher should not count on a school staff at all. He should be a student pure and simple, to whom facilities are granted for observing class management and trying his 'prentice hand. But we have already thrashed this out, and now we can only wait, somewhat fearfully, like the authors of Circular 597, for the result.

The Weak Spot.

THE stir made by the exponents of free and graceful dancing on the stage has prompted an article in the *Daily News* urging dancing in schools as a healthy, artistic, and yet athletic exercise. Children in infants' schools dance, and grown-ups also; but why the exercise should be "taboo" in the intervening state between the kindergarten and the ballroom has always been a puzzle to us. Dancing is an exhilarating, health-giving exercise, always provided that it *is* dancing, and not formal, drill-like stuff. It gives ease and grace of movement too, helps in maintaining a good poise of the body, securing that rare thing—an upright, easy carriage. It is quite natural, too, to dance, as one mode of expressing one's feelings; and since we are all nowadays agog for natural methods and natural topics, why shouldn't boys and girls in schools learn to dance, rhythmically, gracefully, naturally?

On with the Dance.

OUR HOLIDAY COMPETITION.

THE Prize Editor makes the following award in the Photographic Competition announced in our August number. Reproductions will be given next month.

FIRST PRIZE to Mr. GEORGE A. GODRICH, of Belper Street Council School, Leicester. Subject—"The Early Shadows."

SECOND PRIZE to Miss NORA MAGORIS, St. Monica's Secondary School, Skipton-in-Craven. Subject—"On the Banks of the Wharfe."

THIRD PRIZE to Mr. THOMAS SPARK, Wesleyan School, Bishop Auckland. Subject—"Washing Day."

SOMETHING QUITE NEW.

SERIAL publication of expensive books for adults is extremely popular at the present time. Messrs. Nelson have devised a plan for providing children with books of the highest quality on this method. Nothing so novel and educational has hitherto appeared. See advertisements on pp. 206, 207.

The New English Movement.

THE PREPARATION FOR LITERATURE THE MOST IMPORTANT TASK OF THE PRIMARY SCHOOLS AT THE PRESENT TIME.

WHAT CAN BE DONE IN THE ELEMENTARY AND PREPARATORY SCHOOL TO LAY A FIRM FOUNDATION.

THE most important educational movement of the present day has for its object the removal of the well-deserved reproach that we endow our pupils with the power of reading and fail to show them how to use it worthily. Every progressive teacher is asking, What can be done to create a taste for good reading? The Board of Education, His Majesty's Inspectors, education officials, theoretical and practical educationists are all bent upon finding the answer or answers to this question. We are at present making an attempt to solve it in a practical manner as far as it concerns the primary and preparatory school.

In our July number Miss Clara E. Grant dealt with the Literature of the Infants' School, and in the August issue Mrs. Florence Kirk also wrote on the same subject. Last month we published the first part of a paper dealing with the Literature of the First Standard, and this is completed in the present issue. Next month we hope to deal with work of the Second Standard.

THE LITERATURE OF THE FIRST STANDARD.

BY "OBSERVER."

WE are at present in the midst of what might fitly be called an Elfin Revival—if, at least, one may judge from the output of the educational publishers, which is always some indication of the trend of affairs. The fairy tale, we are told, provides the best possible material for rousing, exercising, and training the imaginative powers. It forms the most fitting introduction to the literature of fiction. It makes instant appeal to the mind and sympathies of the average young child. It can be used for purposes of indirect and most effective moral training.

All this is, for the most part, true enough, but it requires some amount of qualification. A few of the "old favourites," which form part of the so-called "inheritance of childhood," are somewhat terrifying to very young children, and are apt to have a disquieting effect upon nervous organisations. Ogres and ferocious giants have a habit of recurring when the night begins to fall, and even Red Riding Hood has been responsible for a good deal of childish terror, or at least disquietude. It is possible, of course, to be too squeamish in this matter, but all teachers who are also parents know well enough that it needs somewhat delicate handling.

I shall be told that such tales as *Jack the Giant Killer*, *Bluebeard*, and others of a like character ought to be known by all children; that a knowledge of them forms part of a liberal education; that they have received the stamp of public approval; that they enshrine moral teaching of a bracing and valuable character. This does not move me. I can contemplate with considerable equanimity the prospect of my own children growing up without a knowledge of them. If they are sanctioned by public approval, then in my judgment there is something wrong with the public, and the time has arrived when the aforesaid public should learn to approve of something more suitable for young children. In this as in other matters educational we are the slaves of custom, bound hand and foot by a few glib phrases.

We must clear our minds of cant in this matter. We must *carefully select our fairy and folk tales*, keeping in mind the tender age of our pupils. There is plenty of excellent material, by no means mawkish in character, if our book purveyors will take the trouble to search the folklore records and pick out the brighter, lighter, and more gracious stories, especially those which by means of gentle humour inculcate a moral lesson without any trace of terrorism.

By all means, then, let us use the imaginative story, carefully selected and suitably presented. Its natural accompaniment is the nursery rhyme, the rhyming riddle, and the simple children's poem such as can now be found in the modern poetry book and reader, which draws upon R. L. Stevenson and other writers of like calibre. In this department we must have the best, and one is glad to see the feeble genial versifier dropping out of the child's poetry book. Not even the recurrence of an occasional hard word in a true poem ought to send the teacher to the feeble stuff that sometimes masquerades as children's poetry. Yet we have known a teacher of a first standard rule out Stevenson's charming *My Shadow* because the phrase "like an arrant sleepy-head" was too difficult! For myself, if I once more had the privilege of teaching a first standard, I would obtain a copy of *The Child's Garden* (which is, unfortunately for us, still protected by copyright), provide each of my pupils with a special exercise book, get them to copy out the majority of the little poems, and use this collection for reading and memorising purposes. This would make an excellent foundation for a true and discriminative taste in poetry.

So much, then, for the prose and poetry suitable for reading-matter to be used by children of seven years of age or thereabouts. I shall be told, however, that as children of this age are *learning to read*, literary qualities in their reading-matter cannot be attended to. This is

perfectly true if the teacher is going to choose a so-called literary reading-book of the ordinary kind, and use it throughout the year for all purposes. The actual teaching of reading, that is the recognition and use of new words and phrases, as I have said, is a blackboard matter. After preliminary exercises, *apart from the book*, the child can really enjoy a prose or poetical passage, the reading of which will not be a "lesson," but an enjoyable exercise of the power of reading. But when I speak of preliminary exercises, I do not mean a formal dreary spelling drill. Given a few new words to be learnt, or to be impressed on the eye, any teacher who knows his or her business can make an interesting lesson out of them—simple word-building, sentence-weaving, and investigation into meanings of a sensible character.

The writers who have dealt in these columns with the preparation for literature in the infants' school have insisted upon the necessity for story-telling on the part of the teacher. This work in literature ought not to cease with the infants' school course. Story-telling and story-reading, as well as dramatising of well-known stories, ought to form an integral part of the literature work in a first standard.

As for material, there is plenty to hand. Three or four firms now publish excellent abridgments of Kingsley's *Water Babies*.* This might be read a few pages at a time, and correlated with the observation lesson work. Another suitable book for this stage is *Alice in Wonderland*, which ought to be read, hard words and all, in its unabridged form, while Tenniel's pictures could be used for drawing purposes. These two books alone, properly used, would serve this standard for story-reading, while select tales from *The Arabian Nights*, Hawthorne's *Wonder Book*, and the collections of Andersen and Grimm might be told in simple language as opportunity occurs.

Now, in choosing literary reading-matter for this standard the general plan to be followed is to select such material as will produce pleasurable associations with the act of reading, and at the same time be morally stimulating. On the whole, pupils of this grade ought not to read purely for information. The object and observation lesson ought to provide such "useful information" as will serve as an incentive to finding out other things for themselves. Instead of the old-time reading on the sun, the rose, the daisy, and so on, the child must be taught to observe these things with his own eyes, and to talk sensibly about them. Instead of reading lessons on the seasons, he must himself be trained to make simple weather observations, and note the changes of the circling year. Yet the time will come when he must be shown that he can get from books a good deal of useful, interesting, and stimulating information. I think a start might be made in this direction with the class corresponding to the second standard, and with this matter I hope to deal in a future paper.

* Messrs. Jack, Horace Marshall, and Nelson at a shilling each; Messrs. Collins at eighteenpence.

SUGGESTIONS FROM AMERICAN SCHOOLS.

BY W. H. WINCH, M.A.

(*Continued from page 119.*)

I HAVE tried to give some account of the reading in the elementary schools of the United States, and have attempted to show the difference which exists between the American attitude towards reading as literature and our own. Fortunately, however, the notion that anything will do for children to hear and read, provided the words are not too hard, is, even in this country, rapidly passing away.

America has really given thought to the question of what shall be read in school. Let me, by concrete illustrations, show what the training colleges are doing to help in the proper selection and treatment of literature for children. The lessons were not prepared for me to hear, and my visits were quite unexpected.

CHICAGO, ILLINOIS, TRAINING SCHOOL FOR TEACHERS.

This was a class of second-year students of a probable average age of twenty years.

I missed the opening of this "recitation" (English readers will remember that *all* lessons in which the pupils present work of their own—and in what lesson do they not?—are called "recitations").

One student, I believe, had just finished reading a short paper on *Grimm's Tales* and their suitability for children.

The teacher, a man (philosophical and psychological educational topics appear usually to be taught by men in America), preparatory to general discussion, raised the following interesting questions—"How far are the events related in these stories free from actual time and space? What proof have we that they are generally believed? It appears that some peasants have believed them; but our older children nowadays certainly do not. We might say, doubtless, that the 'ancestries' (the primitive, realistic forms out of which the present stories have developed) of these stories were once generally believed. We have to remember that the greater knowledge of the actual world to-day makes belief in them more difficult."

An excellent philosophical proem; but the discussion could hardly be conducted on this plane, even by these clever girls. They got down to business at once; and when the teacher asked for questions and criticisms arising out of the paper, there was no lack of speakers. They had more to say than they could get in, so most of them made their strong point, and then gave way with the ease and courtesy of accustomed debaters.

First Student. Do you really think they are first-class stories for children?

Second Student. Questions on the story, such as "What did the baker do?" "How is flour made?" etc., spoil the literary interest, and should not be asked.

Third Student. You *must* tell the children certain meanings. For example, the word "desert" would *have* to be explained for young children.

Fourth Student. I should pick these out beforehand, tell about the "desert" first, and then read the story to the children.

Fifth Student. I think that incidental illustration is admissible; it is only necessary to explain in so far as the story requires it.

Sixth Student. Do you think there is any good in a book of adapted stories? This student then gave her experiences (from her practice work in school) that there was need for adaptation; and she thought there was too great a consciousness of the "how" in her Grade V. (Standard IV.) children to make these stories quite acceptable.

There were other questions and remarks; but those already given of the first six students who spoke are fairly typical.

The teacher said, truly enough, that some students had already answered the points raised by others; he himself saw no danger in the use of a book of such stories, adapted or otherwise, provided it was used suggestively. As to the method of explanation, in pedagogy there was rarely only one good way (some of the keenest of us are apt to forget that, I think); there were as many ways as there were teachers. I don't think the class liked the last suggestion; they had come there to learn the *best* way. However, we now passed to a second paper, this time on Ruskin's *King of the Golden River*, considered as a story for children.

The pictures are good: the book is well printed: the story can be told even to first-grade children (our six-year-old class): the plot is very good, a step above most old stories, because the bad person and the good person are both wealthy and in the same circumstances: the descriptions are, indeed, long, but weird and striking.

Then followed a short paper—"report" in American parlance—on *Undine*. The comparative merits of three different editions were first considered, and the story thus summarised:—

A sea sylph lives with a fisherman's daughter. She has no soul; she loves a knight and gets a soul; the knight treats her harshly. This is a fine story of womanly devotion.

In the discussion which followed, one student said the vocabulary was hard enough for Grade VIII. Another said the story was only fit for high school, and should not be *told*, but *read*, for the sake of its literary value. But the student who read the paper felt sure Grade VIII. would enjoy it. At this point the teacher called for the testimony of those who had used the story; and several students gave discrepant accounts of how and why it had been appreciated or disliked. "May we not say," said the teacher, summing up, "that it appeals to a mixture of interests, *some* of which are suitable to the grammar grades? And why should the *King of the Golden River* be suitable for the first grade, and *Undine* not?" A student answered, "The passions and emotions are all elemental in the one case, the other requires maturity before there is any real comprehension." I think English readers will agree with me that this was a remarkable answer to be given, on the spur of the moment, by a young girl student in training.

Let us now pass eastwards from Chicago to New York.

NEW YORK TRAINING SCHOOL FOR TEACHERS.

The class consisted of second-year students, now in their first term (America has a two-term college year, without our big break at Easter). The average age of the students was about nineteen years. The lesson was entitled, "Some books which may be read in Grammar Grades," which my readers may remember are the higher standards of an elementary school.

I was not present at the beginning of the lesson, so one pupil kindly wrote down for me what had happened in the first few minutes. I cannot improve on the account she gave.

We were reading the passages in Stevenson's *Kidnapped* which describe David's approach to the house of Shaws. We pointed out that Stevenson, with the true artistic instinct, makes his descriptions portray a sense of gloom and desolation, by making a good and careful selection of detail—that is, that he gains as much by what he omits as by what he puts in.

This is part of the work of a class, in the third term, which is engaged in discussing some of the literature suitable for children's reading.

The lesson proceeded:—

Teacher. You often find Stevenson preparing you for what is coming. Give instances.

Three pupils immediately gave three cases briefly, with well-chosen words.

Teacher. Now, how can this be useful?

First Student. To encourage pupils to prepare us for what is coming in their own essays.

Second Student. To help pupils to connect their disconnected essays.

Third Student. Pupils write in a plain way, but Stevenson tells you what is not there.

Fourth Student. He shows how unified a story may be made, and this will help the children.

Teacher. Show where your remarks apply.

One pupil now read a section in illustration; her classmates who were called upon for criticism said, "Children could not follow her," "She reads a little fast." The reading of another student was criticised as "good, clear reading, but not elocutionary." May I say, without offence, that the girls read with a good "English" accent?

Little essays had been written as a preparation for this lesson, one of which I give.

Specimen Essay.

Children are apt to be prosaic in descriptions. It is well, therefore, that they read Stevenson's *Kidnapped*, for Stevenson is very artistic in his descriptions.

He produces an artistic effect in description by telling only some of the details of a scene, and also telling what is not in the scene. To illustrate:

"It was drawing on to sundown when I met a stout, dark, sour-looking woman coming trudging down a hill; and she, when I had put my usual question, turned sharp about, accompanied me back to the summit she had just left, and pointed to a great bulk of building standing very bare upon a green in the bottom of the next valley. The country was pleasant round about, running in low hills, pleasantly watered and wooded, and the crops, to my eyes, wonderfully good; but the house itself appeared to be a kind of ruin; no road led up to it; no smoke arose from any of the chimneys; nor was there any semblance of a garden."

The next section of the lesson dealt with the teaching of grammar; this ended the purely literary section.

But, after all, we need to see literature at work. Merely general directions and discussions never seem to me very helpful, so I will give an actual illustration from another city two hundred miles north-east of New York.

BOSTON, MASSACHUSETTS, ELEMENTARY SCHOOL FOR GIRLS.

This was a Grade V. (our Standard IV.) class with twenty-one girls present, varying in age from nine to thirteen years.

In each of the grammar grades in this school the work of a particular poet is studied. His portrait hangs on the wall. One corner of the room, called "Poet's

Corner," is devoted to him, and three of his poems are learnt by heart.

The day was gloomy, the wind was howling, and the rain dashing against the windows. Thirty-two of the girls were absent, but those who were present did not seem affected by the weather.

"What are you?" said the principal, as he entered the room.

"P. W. Girls," was the answer; translated for me, "Pleasant Words."

Principal. What is the sign?

Pupil. The sign is a smile.

Principal. And the motto?

Pupil. *Make the world within our reach*
Gladder for our human speech.

Principal. What else are you?

Pupil. We are Whittier Girls.

Half the pupils buy a Whittier, I was told, so that they can look through him to find out pretty bits, which they learn and repeat to the class. I heard some pieces on love and patience; one little girl said she knew sixteen selections, another one ten, and another "a good few." They try to find music to which to set their selections. Three of them stood up and sang them to tunes which they had chosen. These pieces of poetry were in addition to the poems which were learnt in class. This year they were all learning "A Dream of Summer," 24 lines; "My Triumph," 72 lines; "In School Days," 44 lines. Several girls recited these very nicely, though there were more lapses than I should have expected in the continuity of the verses. One of the pieces I thought rather difficult, but the principal told me that no attempt was made to reduce the poetry "to the supposed level of the child's intelligence."

In this school also I saw, what indeed I had seen elsewhere, little books which had been built up by individual pupils about the poet they were studying.

Pictures to which suitable quotations were attached were inserted in this book, with portraits and biographical material, and well chosen selections.

I do not think that in many of our own schools our pupils could be prevailed upon to buy a complete copy of a poet's works, but it would not be impossible to persuade some at least of the children to make up a little manuscript book about the poet whose work they were learning. They could insert such information, pictures, and quotations as they might perchance find in their general reading or obtain from their parents and others interested in their school work. It would, at least, be a contribution of their own, and. so far, would realise an ideal fixed in America, and exercising increasing power in our own country.

(*To be continued.*)

THE ENGLISH ASSOCIATION.

THE Committee of the above Association has recently issued a leaflet bearing the title "The Teaching of Shakespeare in Schools," and dealing with the subject as it affects—

I. Pupils between the ages of twelve and fourteen.
II. Pupils between the ages of fourteen and sixteen or seventeen.
III. Students of seventeen and upwards.

Teachers in primary and lower secondary schools will be most keenly interested in the suggestions offered under Section I. of the above. We give a short summary. The plays said to be suitable for this stage are *Julius Cæsar*, *The Merchant of Venice*, *Twelfth Night*, *A Midsummer Night's Dream*, and *As You Like It*. It is recommended that the selected play be read aloud, certain pupils being cast for some of the parts, and that a few of the finer passages be committed to memory. Plot and characterisation should be studied "on a modest scale," grammatical and linguistic instruction kept entirely in the background.

We are sorry that the Committee have not amplified and expanded their suggestions. Teachers beginning Shakespeare need very definite guidance, and though the work has been done on the above lines for some years in our best primary and secondary schools, there is still a feeling of unreality about it all even in the minds of really enthusiastic teachers, who endeavour to get at the child's point of view. Granting that the plays named above are the most suitable for beginners, they are yet strong meat for babes. We wish that the Committee had organised a fearless inquiry into the whole question, throwing aside all precedent and prejudice, and judging the matter from the point of view of adults who are neither teachers nor educationists, using the latter term in its narrower sense.

We regret, further, that there appears to be little indication of the English Association affording practical help to teachers in primary schools. One of the "chief objects" of the body is "to promote the due recognition of English as an essential element in the national education," but this object cannot be achieved, even in a partial manner, unless the crying needs of the elementary schools are ministered to both swiftly and effectively. The present generation loudly demands the services of a man or a small body of men who, taking all the difficult conditions into consideration, will guide the great body of primary teachers into profitable paths, will show them how to teach English—language and literature—as it has never been taught before. Conditions are indeed difficult, teachers are hampered unduly by extraneous circumstances, and the dead hand of a discredited *modus operandi* presses heavily upon the efforts of the reformer.

Here is a noble piece of work for men of ideals and practical common sense. One can indeed conceive of no higher task—to create a real interest in the best kind of reading suited to the conditions, and to ensure a respectful, we had almost said reverent, use of the mother-tongue in the mouths of the people. Many of the pupils of the elementary schools must, under present social conditions, pass lives which will be mere "mounds of mud," but the earnest and wise teacher has it in his power to create for some of these that "inner chamber wherein they may dwell delighted," to lead them to that "world's sweet inn from care and wearisome turmoil" of which Spenser speaks. As I write my train is passing within sight of the mean streets of a huge industrial city in the Midlands—a "mound of mud" indeed. Teachers cannot change the social conditions under which live the children whom I can see "playing in the streets thereof," but they can give them a refuge if they choose, and if some one will show them the way.

STRAND improvements include the demolition of Wych Street, so long occupied by Mr. C. A. G. Browne's Advertising Agency, and terms having now been arranged with the London County Council, Mr. Browne has removed to new offices, "Wych Street House," No. 20 Wellington Street, Strand, W.C.

NOTES ON READING IN THE UPPER CLASSES OF PUBLIC ELEMENTARY SCHOOLS.

[The following helpful notes were originally printed in pamphlet form under the direction of the Chairman of the Birkenhead Education Committee, by whose kind permission the Editor is now enabled to place them at the disposal of a wider circle of teachers.]

THE following suggestions are put forward in the hope that they may be useful to Local Education Authorities, Managers, and Teachers in the selection and employment of books in the senior classes of elementary schools. They are the outcome of certain inquiries made in the schools during 1906 and 1907. They apply to classes of children ten years of age and over, roughly the old fifth and higher standards; but more especially to those children who are in their last years at school. They are meant in the first instance for town schools.

The art of reading, on its mechanical side—that is, the art of recognising and naming words—should undoubtedly have been mastered by the age of ten. This does not mean either that before the age of ten instruction should be confined to the mechanical side, or that a child over ten ought to be expected to pronounce rightly or to understand every word he may meet. It should mean that the main obstacles to progress are no longer forms but meanings; and that the attention of the teacher may safely be turned away from what was a principal object when teaching children of seven—namely, the constant practice in the recognition and correct oral representation of words. To the child of eleven and over reading should mean for the most part what it means to the adult—reading for purposes of study or pleasure. This point is important, as it affects both the selection of books for older children and the method of treating them.

THE OBJECTS OF READING.

The objects of reading in the upper classes may, perhaps, be analysed into three.

A.—Progress in the Knowledge of the Mother Tongue.

Any scheme should make provision for progress in reading itself—that is, the ability to make out and understand the native language as printed. The child of ten may be able mechanically to read off the most advanced matter with accuracy and even fluency, but clearly he cannot read with intelligence and full comprehension what is beyond the stage of general knowledge at which he has arrived. The reading lessons of the lower classes—the actual teaching of the subject—must be continued to some extent, even if methods are modified. Hence the primary need of a "reader" of some sort which shall be the manual or handbook in this subject. What form the manual should take will be discussed later on.

B.—Cultivation of Taste for Personal Reading.

A reading scheme should also provide for the acquisition of a taste for personal reading, displayed in the enjoyment of sound literature in prose and verse. This aim and the method of attaining it should be quite distinct from the aim and method just laid down; it is a task of great difficulty to combine a lesson of which the essence consists in acquiring new words and ideas and in overcoming difficulties with one of which the main purpose is to cultivate so intangible a thing as taste and enjoyment.

C.—Study.

Provision should also be made for training the children to acquire knowledge from a book—to use the book as a tool, primarily for the sake of its matter, and for some utilitarian end of ultimate or immediate value. This purpose is also distinct from the foregoing, and an attempt to combine the three or any two is likely to result in confusion.

The necessity for providing for the three distinct aims—progress in reading in general, enjoyment of literature, and the power of studying from books—should govern the selection of books for the older scholars in our Elementary Schools.

SELECTION OF BOOKS.

A.—For Progress in Reading itself.

In the past reading has almost universally been construed to mean reading in the first sense noted above; it has rarely been tested except by reading aloud. All reading books therefore, practically without exception, have been chosen as manuals of reading, with the sole object of promoting the mechanical art. They were not so much books as "readers" specially compiled for school use, just as text-books in arithmetic are prepared. Even the geographical, historical, and scientific readers have been graded from the point of view of progress in reading alone.

Yet a good deal would be gained if one only of the books selected for each class were chosen specifically for this purpose, and used principally for it. The book may be of the type usually called "literary reader"—that is, a book of short pieces specially composed, or, better, extracts from authors of various kinds and styles. It should usually, of course, represent a clear stage in advance of what has preceded it in the previous class. It may be a continuous book. In proper hands there is no reason why, for an appropriate and advanced class, a book like *The Talisman* or *David Copperfield* should not be used as a manual of reading. It will be difficult to complete so long a book in the thorough manner in which a reading manual should be handled; but there is no obligation to finish the book as books were read and re-read when reading was invariably tested by reading aloud, nor is there any necessity even for treating the whole book as a manual. Probably, however, a book of extracts, with its greater variety, is more suitable. By a specially sympathetic and competent teacher a book of poems could serve the purpose; but on the whole it is better to have a combination of poetry and prose. A general history is *most* unsuitable as a manual of reading. So is the ordinary kind of geographical reader, in which the text-book element predominates. There is less objection, however, to continuous books of a descriptive kind, well-written accounts of travels (*The Voyage of the "Sunbeam"*), biographies (Southey's *Life of Nelson*), or even portions of great histories, such as Prescott's *Conquest of Mexico*.

B.—For the Cultivation of Personal Reading.

In order to cultivate a taste for personal reading, *books* are clearly required and not "readers." And at the stage which the children have reached, when rapid

reading for enjoyment is definitely aimed at, the story element should predominate. Stories of some length are probably better than collections of short tales, even fairy tales, though these are by no means out of place. A practice has been adopted with success at Birkenhead and elsewhere of providing for the upper classes, not x copies of one book for the use of all the class, but one copy of x books, so that each scholar may have the choice of several complete books to read to himself during the year.

Care is needed, of course, in the selection of books under this as under other heads. Books written for boys and girls offer themselves in large numbers, and many are suitable; but books written *down* to boys and girls should be, as a rule, omitted. Yet the opposite extreme should also be avoided: it does not always follow that the English classics which an educated man may enjoy will also be enjoyed by children in elementary schools. Facts must be recognised, and among them is the fact that children of twelve and thirteen are often repelled rather than attracted by the full-blooded and latinised style of writing which prevailed early in the last century. Even Scott himself, whom every intelligent child is expected to relish, uses too adult and mature a diction for many children in our elementary schools, whose opportunities for knowing the world outside their own immediate environment are very limited, and whose acquaintance with the mother tongue is inadequate. Yet the experience of schools in Birkenhead indicates that many books as "difficult" as Scott are enjoyed and appreciated.

Under this head might come a small book of poems.

C.—For Study.

The choice of books by which children are to be trained to study, to use the book as a tool, as a source of information, calls for even more discrimination than in the two cases previously discussed. The book must in the first place be easy; it must offer no difficulties in style and composition; all its difficulties should be those of matter. For the reason that they were bought to serve a double purpose—to teach reading in a narrow sense as well as geography or history—the older type of geographical and historical reader very often failed to do either effectually. The child was so much taken up with the actual difficulties of making out the text that perforce he neglected the matter. A reader of the type formerly called a "Standard VI. History Reader" is too hard for a Sixth Standard to use as a book for study. How much easier a study book should be than the manual of reading in use need not be dogmatically determined; the main point is that the child must be able to confine its attention entirely to the matter, untrammelled by obstacles of form.

Books of this type are not common. Text-books are not meant—at any rate text-books of the ordinary kind. (The whole question of text-books in elementary schools, though allied to the question under discussion, is designedly omitted from it—for the sake of clearness.) Nor are the historical, geographical, and scientific readers usually met with, even though they be easy. The double purpose for which they were intended makes them unsatisfactory for the object in view; they are commonly neither good text-books nor good reading books. Different kinds of books may be sought according to the subject. For domestic science, some plain, non-technical book—and there are not a few on the market—is suitable for girls. For geography a book consisting mainly of description is desirable. For history, probably one composed specially for elementary schools, and not pretending to be a complete history of a period. The question of a book for science is difficult. The chief value of elementary science teaching lies in training observation and in the practical handling of things. Yet a good book on natural history would not be inappropriate; nor, if they were easily obtainable, would simple books explaining the principal phenomena of the physical world.

GENERAL REMARKS.

1. The above considerations do not exhaust either the objects of reading or the principles on which books may be chosen. For example, no mention has been made of the literary side of reading, the appreciation of fine thoughts expressed in fine language; nor again of the elocutionary delivery of worthy pieces. It is thought, however, that these objects do not require special books, and that the discussion of the main points would be clearer if free from the introduction of subsidiary questions.

2. No attempt is made to lay down definite rules as to the proportion of the time available that should be given to each of the objects discussed. Probably work in books of the A type will diminish, and work in books of the C type increase, as the scholars grow older. The proportion of time devoted to type B will depend on how much reading is done by children at home; if the mass of the children read a great deal at home under the guidance of the teacher, they will need less of continuous reading at school.

3. On general principles it is advisable to avoid the too common practice of grouping together for reading scholars in different years, and presumably at different stages of advancement; it will give the senior section of a group (say, Standard VII. or a combined class of VI. and VII.) a proper pride in itself if it is allowed to read independently and apart from the junior section.

(*To be continued.*)

PHONETICS AND THE TEACHING OF SPELLING.

BY T. R. DAVIES, M.A., HACKNEY DOWNS SECONDARY SCHOOL.

IT is my intention to describe briefly the use of phonetics in the teaching of spelling. This subject has in the past formed a large part of the curriculum of lower forms, but the results are not what one would expect when the pupils reach the middle forms. This weakness is due to the absence of system. Long lists of words are learnt—a method which imposes too great a strain upon little boys. A further objection is that no connection whatever exists between the words; it is merely learning a mass of symbols which convey no definite idea to the mind. This process becomes quite mechanical, and gives the pupil a distaste for the subject.

The first step, then, is to group words upon some definite basis. The most striking method is to classify words which have the same sound. These words are then written on the blackboard in phonetic script. This affords a common element upon which the attention of the pupil can be fixed. Care must be taken at this stage not to write the words in the ordinary orthography, otherwise we have a recurrence of the difficulty

mentioned above. The next step is to acquire the correct pronunciation of the words. When this has been learnt, the English rendering can be written side by side with the phonetic script. By comparing the ordinary with the phonetic script, the pupils can be made to see that the phonetic symbol is represented by certain combinations of sounds in the customary orthography. Compare sɑd (cede), bɑtʃ (beach), pɑs (peace, piece), rɪsɪv (receive). These and other examples can be systematised and put into the form of short rules easy to apply, thus doing away with a needless amount of "grind." The rules would take the following form: "'ɑ' is represented by the letters e, ea, ie, ei, etc." This rule does not exhaust the ways of rendering the sound; such words as "key," "quay," are exceptions, but so striking that they will immediately attract the pupil's attention.

Very often a boy does not know the meaning of a word in the list; he should be taught to consult his dictionary. The majority of the boys in my class were too young to do so; but, after a little explanation, they were perfectly able. Very often the explanation given had to be simplified or enlarged upon. Even then I could never be certain that the meaning of a word had been fully grasped until it had been put into a sentence; this test never once failed. It is advisable for the boys to write their sentences; in this way they become more familiar with the spelling of the words. I tested the progress of the class by a series of unprepared dictations, and the results exceeded my expectations.

PRONUNCIATION OF SELECTED CLASSICAL AND MEDIÆVAL NAMES.

BY E. P. DOUGHTY, M.A.

(*Continued from page 125.*)

HERE we may insert a remark which should have been made before. The light and accented vowels ă, ĕ, ŏ are not always pronounced carefully, but often receive the obscure sound of the second *a* in *manna*. We shall not point out where such weakening of the sounds is allowed, as it will occur automatically. An instance occurs in the next name.

Dae-dă-lŭs rhymes roughly with *wheedle us*, the Greek form Dai-dă-lŏs with *spied a loss*.

Dă-măs-tēs, Dā-mŏ-clēs, singular nouns, final syllable rhymes with *ease*.

Dā-mōn, *day moan*.

Dăn-ă-ē; the *ae* here is not a diphthong.

Dăn-ă-ĭ-dēs; four syllables, with the stress on the first: *ēs*, plural ending. There is no need to follow the English tendency, and pronounce Dă-nā-ĭ-dēs.

Dăn-ă-ŭs; *au* here not a diphthong.

In the case of the preceding words care should be taken to notice the value of the *a* in the first syllable, whether it is that of *a* in *dame* or *dam*, *Dane* or *Dan*.

Dē″-ĭ-ă-nī-rā; the *-ni-* here represents the Greek *nei*. Sometimes the name is less correctly spelt Dejanira.

Dē″-ĭ-dă-mī-ă, Dē-ĭph-ŏ-būs; in these names *Dei* is a dissyllable.

Dē-mē-tēr: note the three long *e*'s.

Dē-mŏph-ŏ-ōn; the two consecutive *o*'s form two syllables, and a careful pronunciation will give each *o* a different value. This ending will be found in some other names.

Deu-căl-ĭ-ōn rhymes with *you rally on* (*ly*).

Dĭ-ă-nă: pronounce the *Di* as *dy* in *lady*, and the first *a* as in *father*; this pronunciation is more accurate than the usual *Die Anna*.

Dĭc-tys, *Dick tiss*.

Dĭn″-dy-mē-nē.

Dĭ″-ŏ-mē-dēs. The English form of the name is Diomede, pronounced *Die O Mede*. -Ēdēs (especially in the form -mēdēs) is a very common ending.

Dĭ″-ŏ-ny-sŭs.

Dĭ″-ŏs-cū-rī. The Greek form is Dioskouroi (*cowroy*).

In these three last names, and perhaps in all others beginning with *Dio-*, *Di-* is a more accurate pronunciation than *Dī-*, though the latter is very common. Dis, usually as *Diss*, more accurately to rhyme with *cease*.

Dō-dō-nă.

Dry-ă-dēs, *-ēs* plural ending, Dry- as in "*laundry*;" often pronounced more incorrectly Drȳ-ă-dēs.

Ē-chĭd-nă: *chid* = "*kid*." Ē-chĭ-nă-dēs, plural word; *-chi-* = "*kye*."

Ē-ĕt-ĭ-ōn.

Ĕn-cĕl-ă-dŭs. If we pronounce the *c* as an *s*, the first two syllables will be *en-sell*; if we give the *c* its proper sound, namely *k*, the *n* preceding will be affected, and the result will be *eng-kell*.

Ē-ōs: notice *ō*.

Ē-pē-ŭs; *eus*, a dissyllable, representing the Greek *-eiŏs*.

Ĕp″-ĭ-mē-theus: *-eus*, monosyllabic; *th* as in *thin*.

Ē-rĕch-theus; the second syllable = *reck*.

Ē-rĭ-nys, plural Ē-rĭ-ny-ĕs. There is another spelling and pronunciation: Ē-rĭn-nys, Ē-rĭn-ny-ēs.

Ēt-ĕ-ŏ-clēs, with the stress on the first syllable; the pronunciation Ē-tē-ŏ-clēs is more incorrect.

Eu-ăn-dĕr. The Greek form is Euandrŏs. There is an inferior spelling, Evander.

Eu-boe-ă, roughly as *yew bier*; *oe* diphthong.

Eu-mĕn-ĭ-dēs, plural word.

Ēu-ry-ă-lŭs: note the stress on the first syllable; pronounce the first part like *Uriel*; do not pronounce Eu-ry-a-lus.

Eu-rydĭ-cē; here perhaps custom will make us pronounce the *-ce* as *sea*.

Eu-rys-theus, *-rys* = *ris* in *risk*; *eu* a diphthong in each case.

Gă-lē-sŭs.

Gē-ry-ŏ-nēs rhymes with *weary ŏ' knees*. Other forms of the name are Gē-ry-ōn and Gē-ry-ŏ-neus.

THE RED CODE.

WE have received a copy of the N.U.T. Code revised to September of the present year. This publication is absolutely indispensable for all who have dealings with educational officialdom, local and central, as well as for the aforesaid officialdom itself. It is fully indexed and annotated in a most helpful manner. A specially helpful feature is a list of the changes made in the Code of the preceding year.

ONE PENNY A WEEK!

THE attention of teachers is specially directed to the advertisements on pp. 206, 207 respecting a *striking new scheme* for providing children with *books for the school* and *books for the home* at *one penny a week!*

WEATHER OBSERVATION IN SCHOOLS.

BY W. C. UPSHALL.

IN most elementary schools of to-day some amount of science teaching is given, and by including a systematic course of weather study a wider opportunity is given to each pupil for direct observation of phenomena which can be *seen* every day, but are so familiar that they are rarely *observed* in an intelligent manner.

The pupils of a country school notice the changing atmospheric conditions more than the pupils in a town school. To actually record these day by day, and then every week to show graphically on squared paper the difference in the dryness of the atmosphere from day to day, the highest and lowest temperature, the rise and fall of the barometer, amount of rainfall, etc., open out a new field of knowledge in which it will be found that pupils take the keenest interest.

Moreover, a taste for real and original research is acquired, a foundation for the spirit of scientific inquiry inculcated, and an opportunity afforded for developing the reasoning faculties, besides bringing the pupils into direct acquaintance with many elementary principles of physics, and also correlating the studies of geography, nature study, and elementary science.

Each pupil learns for himself the absolute necessity of habits of regularity, close attention to detail work, neatness in the graphing of records, and mechanical accuracy in the calculations, while arithmetical problems in connection with the work present a real and practical interest.

A School Climatological Station.

The fitting up of a school weather observation station need present no difficulty of expense or of construction. A square plot of ground should be selected in the playground or in the master's garden if adjoining the school. This plot should be 15′ × 15′, or better, 20′ × 20′, and be in an open situation, as far as possible from tree, hedge, wall, or house, and gravelled or turfed over.

The greatest difficulty is to get a Stevenson screen in which to place the thermometers, and the cost of which would be about thirty shillings; but if home-made, the cost might be considerably reduced. In the screen should be placed a wet and dry bulb thermometer, cost about 5s. 6d.; a maximum thermometer, cost 5s. 6d.; and a minimum thermometer, 3s. 6d.

The screen stands on four legs fixed into the ground, and should be placed on the north side of the plot and open on the north side. A rain-gauge should be fixed on the south side of the plot. The cost of a rain-gauge would be about 6s., and a measuring glass 2s. If the rain-gauge were home-made the cost would be much reduced. A home-made barometer can be made for about 7s. 6d., and kept affixed on wall inside the school.

Recording Observations.

A small notebook is kept for recording the observations, arranged on each page as follows:—

July 14, 1908.

Dry bulb thermometer .	. 61.
Wet bulb thermometer .	. 58·5.
Maximum thermometer .	. 64.
Minimum thermometer .	. 49·5.
Cloud	. 6 Cu.-Ni.
Rain	. ·18.
Barometer 29·40 (corrected)	. 29·25; 64°.
Wind	. W.(WNW. in evening).
Remarks	. Fine, stormy, thunder.

A book ruled out for each month and kept for reference, or perhaps better, a larger size, containing sufficient pages to last a year, would be more convenient. Every morning at 9 a.m. six boys go out to the screen in order to record the readings. One boy makes the entry, while the others call out the readings shown by the instruments. On returning to the schoolroom each boy in the class takes out his recording sheet—ruled as below—and enters up the observations for the day. The maximum temperature, rainfall, and remarks are entered to the previous day.

Climatological Observations, July 1908. Time, 9 a.m.
Latitude. Longitude. Height above sea-level.

Date.	Thermometers.				Amount of Cloud. 0-10.	Rain in Ins.	Bar'meter.	Wind.	Remarks.
	Dry.	Wet.	Max.	Min.					
14	61	58·5	64	49·5	6 Cu.-Ni.	·18	29·40	W.	Fine, stormy, thunder. Wind veers to WNW.
Sums.	1965	1880	2193·5	1576·5	232	1·76	916·65		
Means.	63·4	60·6	70·8	50·9	7·48	·06	29·56		

At the end of each week the readings are graphed on squared paper, and at the end of the month the recording sheet is totalled, the means calculated, and this is shown graphically.

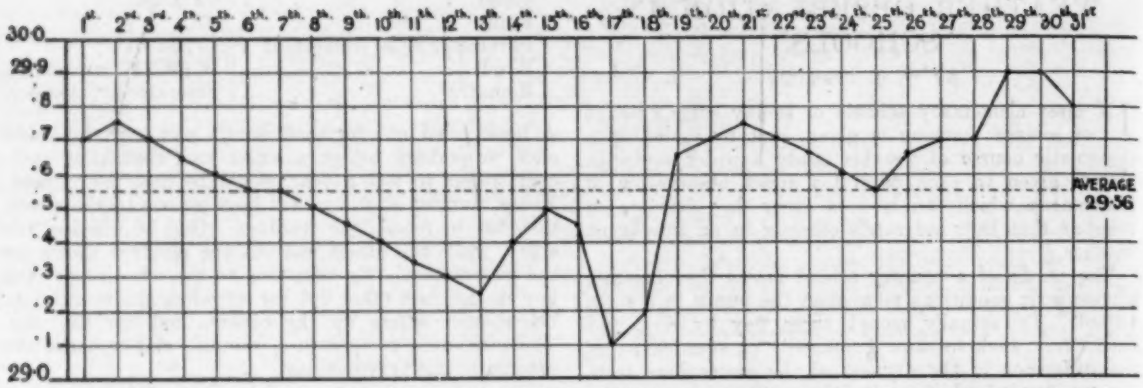
The teacher would do well to get *Hints to Meteorological Observers*, by W. Marriott, published by E. Stanford at one shilling and sixpence. Another useful little book is *Some Facts about the Weather*, by the same author, publis'ed also by Stanford at sixpence.

The Barometer.

The cost of a Fortin or Kew barometer being about £7, such an instrument is out of the question for school purposes. Messrs. Gallen Kamp supply one at £3, 7s. 6d. which is equally accurate, but any teacher can make one at a cost of about seven shillings which will give good readings. I may say that I am using one at the present, my residence being a climatological station of the Meteorological Society. It can be constructed as follows: Procure a piece of pine board 3′ 6″ long, 6″ wide, and ¾″ in thickness. Rule a horizontal line across the top of the board at A, and another at B parallel to it, and at 32 inches distant.

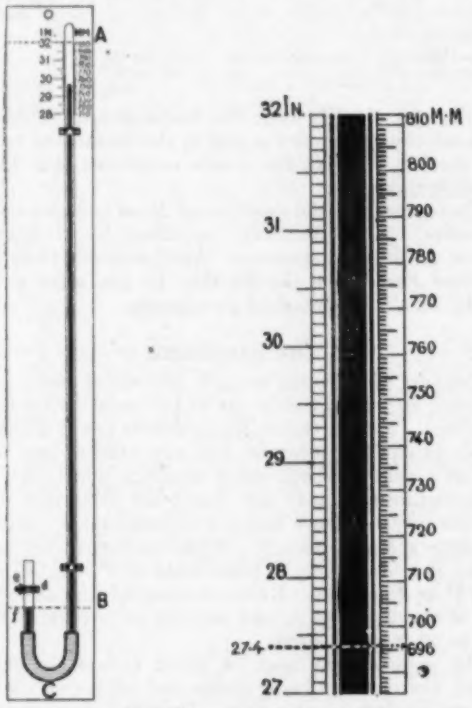
The scale should next be fitted accurately on the board, the readings being inches and tenths on the left, and millimetres on the right. Rule the scale of inches on a piece of drawing paper from 27″ to 32″. Then take a piece of millimetre paper, and arrange it on the right side so that 27·40 inches is opposite to 696 mm. Now mark off the millimetres in tens from 700 upwards.

Next get a barometer tube, which will cost about 2s., and at the open end fit a piece of rubber tubing C 10″ long, and into the other end of the rubber tubing a piece of glass tubing. The whole is secured to the board by clips (see next page), and by a movable clip at *d*, which can be unloosened by a thumb-screw *e*, so as to allow the level of the mercury to be adjusted at *f* before



Barometer Readings, July 1908. Time 9 a.m. 130 feet above sea-level. Corrected and reduced to 32° Fahr. at sea-level.

taking readings. To fill the tube with mercury, first remove the short piece of glass tubing at *f* and invert the board, fixing a funnel in the place of the glass tubing. Fill with mercury to about 1 inch below the end of the rubber tubing at *f*. Remove the funnel, reinsert the glass tubing, and fix in position.



The accompanying diagram shows how to arrange a scale so as to read inches or millimetres. In order to read hundredths of an inch a very useful appliance will be found in "Crooke's Vernier Ruler," supplied by W. H. Harling, 47 Finsbury Pavement, and costing 2s. 6d.

Good and cheap millimetre paper is supplied by Pye and Co., Cambridge, or W. George of Birmingham.

Attached to the barometer board should be a thermometer, and the temperature recorded as well as the height of the mercury column. Corrections must be afterwards made for height above sea-level and for temperature. The height above sea-level can always be obtained by referring to the nearest bench mark on the Ordnance Survey map of the locality, and taking the level of the situation from this.

The method of graphing the barometer readings is shown above.

(*To be continued.*)

RURAL EDUCATION.

Summary of a Paper read before the British Association (Dublin, 1908).

BY MR. GEORGE FLETCHER.

It seems desirable to define as clearly as may be the nature of the reform desired. It should be plainly understood that there is no desire to displace or supersede the fundamentals of a general education. Indeed, it is less a question of the introduction of a new subject into the curriculum than the infusion of a new spirit into the system.

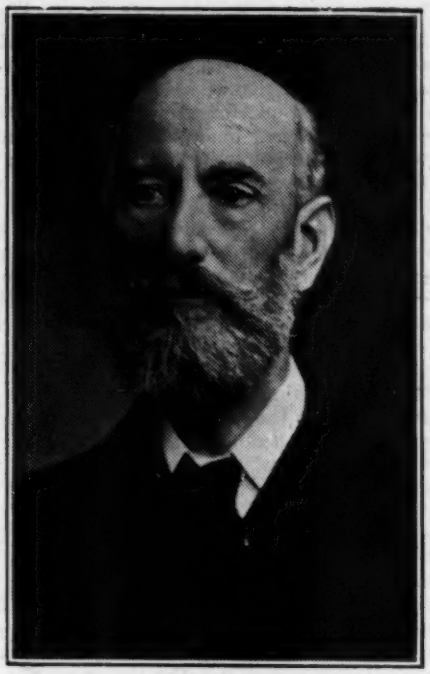
So long have we continued to run in the academic groove that primary education seems to have become a thing somewhat remote from the lives of those receiving it; and this want of relation is the more marked in the case of rural schools.

The lesson in geography too often deals with a foreign country, while the pupil remains ignorant of his immediate neighbourhood. His early steps in art are dogged by the acanthus leaf—although in this matter we are mending somewhat—while his problems in arithmetic suggest a Stock Exchange rather than the countryside.

It may be admitted that the sole test of the fitness of any subject in the curriculum is its value as an educational agent; but it needs to be recognised that the commonest things in one's everyday environment may be made to serve an educational end.

If every school in town and country possessed and utilised freedom to make its surroundings a means of education, the problem would be in a fair way to solution. This, however, involves the introduction of the spirit to which reference has been made, and this can only come through the teacher.

The problem then, as in so many cases, resolves itself into the question of the training of teachers. In connection with this, it is desirable to urge the value of carefully arranged summer courses of instruction as a means of affording supplementary training of the type in view for rural teachers.



PROFESSOR MIALL,
President of the Educational Section of the British Association.
(*By permission of the "Daily Graphic."*)

STUDIES MOST SUITABLE FOR ELEMENTARY SCHOOLS.

First Section of the Report of the British Association Committee appointed to consider the Course of Experimental, Observational, and Practical Studies most suitable for Elementary Schools.

IN presenting the following Report of one of its Sub-Committees, the Committee is glad to avail itself of the opportunity of placing on record the unique experience which Mr. Heller has had in organising and superintending the instruction in experimental work in elementary schools, first as an organising inspector under the London School Board (1894–97), and afterwards, since 1900, as head organiser and inspector of science instruction for the Board of National Education, Ireland. The Report has the advantage that all the recommendations that are brought forward in it are based on actual results of work carried on, not in a single school, but in a large number of schools both in England and Ireland.

TWENTY YEARS OF PROGRESS.

This branch of instruction in primary schools has been the subject of inquiry within recent years by two Committees of the Association. The fundamental principles that should guide the teaching of elementary experimental science were clearly enunciated in the 1889 and 1890 Reports of the Committee of Section B on the teaching of chemistry. The experience of the past fifteen years tends to emphasise rather than to modify the recommendations of those Reports. During this period a remarkable transformation has taken place in the teaching of elementary science in this country, traceable in its origin to the 1889 and 1890 Reports, and to the indefatigable efforts of Professor Armstrong and other members of that Committee to achieve reform. In place of a large number of alternative specific subjects, none of them really fundamental in character, it is now insisted that there should be one general introductory course, indoctrinating that alphabet of scientific method and knowledge upon which the intelligent study of all specific sciences is based. The Reports directed attention to the overwhelming importance of method in instruction by insisting that mental training and the formation of accurate habits of observation, of work, of reasoning, and of description were at the early stage of education of far greater moment than the accumulation of facts or the ability to answer examination questions on these facts. The deliberate intention to achieve these ideals must lie behind all teaching of elementary science. To accomplish such ends it was found necessary to recommend a complete change in the methods of instruction commonly practised and in the attitude of the teacher towards his pupils and his subject. The "results system" of the "Science and Art Directory" and the Board of Education's "Code" had, after twenty years, well-nigh killed the art of elementary teaching, the learning of rules and half-understood facts having become general. The method of experimental inquiry is the only natural method of gaining a knowledge of scientific facts, but such a method is the very antithesis of the didactic method of instruction too generally in vogue.

The practical method of inquiry now known as "heuristic" has been defined as "carefully directed inquiry." Instruction should take the form of the experimental solution of a series of problems arranged in rational sequence. The motive for the experiment must be the outcome of skilful teaching, in which the teacher has led his pupils from the known to the unknown, and to a clear conception of the problem to be solved; the experiment should not be merely an occasional effort to substantiate one of the many facts that the teacher has told his class.

Teaching in which experimental results are to form the basis of reasoning and to be regarded as suggesting new problems should involve precision; the facts must at least be true, or the method is obviously of no more value than those it is intended to supplant. Measurement may be the basis of experiments, and quantitative thinking should always be encouraged.

The Reports referred to have profoundly influenced, directly and indirectly, the science teaching in secondary schools. Well-equipped laboratories have been provided in almost every good school, and the attempt to give logical experimental instruction is at least professed. Test-tube work and the analysis of salts are for beginners a thing of the past, and the balance is made the basis of the first years of experimental work. During the *régime* of the inspection of "Schools of Science" by the officials of the old Science and Art Department good constructive work was accomplished, and this period did much to set the standards of work since adopted in secondary schools generally.

In the primary schools great changes have also taken place. The higher-grade schools of the larger urban education authorities are usually well equipped, and a special teacher of experimental science is appointed to take charge of the laboratories. Increased provision has also been made in pupil-teacher centres and in training colleges for the teaching of experimental methods.

In many urban centres, from reasons of economy and because few of the ordinary teachers possessed an adequate acquaintance with apparatus and experimental methods, a special staff of peripatetic science demonstrators was appointed. These taught periodically in the schools of their district, usually carrying their apparatus about with them. The scheme of instruction followed was known as "Mechanics," but embraced a superficial treatment of hydrostatics, the laws of force and motion, heat, chemistry, and electricity. In some cases the individual ability of the demonstrator made the lessons useful and interesting; but the system was only adopted as a matter of expediency, and the scheme of instruction has been far too comprehensive to lead young children to much real knowledge that could be applied to life later on. Under this system of peripatetic instructors little effort has been made or could be made to co-ordinate instruction in science with that in other subjects, such as composition, arithmetic, and drawing. Between the visits of the special instructor the class teacher was supposed to revise the lesson without the assistance of the apparatus that the former carried round with him: this revision was done in a half-hearted way, and led to undesirable methods of memorising half-digested information.

It appears to be undesirable that the system of special peripatetic instructors should continue, except as a temporary expedient, and until each school possesses a permanent and sufficiently qualified teacher of experimental science. The services of a staff of specialists should be employed in instructing the ordinary teachers, more especially in the methods of teaching and organisation. The rigid adherence to the class-teacher system met with in most primary schools should be abandoned, and the best qualified teacher should be responsible for the instruction in several classes, if not for the whole school. It should be the business of the head teacher to ensure adequate co-ordination of instruction in drawing, composition, and arithmetic with that in science.

The Relation of Nature Study and Observation Lessons to Experimental Science.

The "Suggestions" of the Board of Education deal in detail with the aims and methods to be observed in nature study, the advice therein given being substantially in agreement with our Report presented at the York meeting. It is satisfactory to notice that the guiding principles which through the teaching of experimental physical science have been instilled into the minds of teachers are now recognised as applicable and desirable in instruction relating to natural objects and phenomena. At the same time it is to be feared that the present tendency to substitute in the higher standards of schools "nature study" for a systematic, logical, and progressive course of experimental physical science has grave dangers.

A very considerable amount of the "object teaching" in the lower standards is of a highly artificial character, being in most cases educationally valueless. The disconnected series of lessons on subjects which come most easily to the teacher's hand—for example, a table, a chair, a pen, a piece of chalk—which has become traditional, results in little more than a "laborious elucidation of the obvious." It would seem to be essential that a broad outline of a scheme of object studies should be prepared by the teacher for the year's work in advance, and that these should be connected at least in short series. They should involve to a large extent a real examination of individual objects by the pupils themselves, and should on no account be demonstration lessons in which the teacher holds a single specimen in his own hands. Good subjects for such lessons are those connected with plant life, for it is easy to obtain sufficient objects at practically no cost. In the minority of cases, where the pupils can be taken out of doors under the charge of the teacher, real nature lessons can be given; but in the majority, where the conditions of school work render such outdoor lessons an impossibility, much useful observation may be encouraged by mentioning the subject of the next lesson several days beforehand, and by suggesting a few simple and definite inquiries. The lessons in the spring and summer months will be mainly in connection with natural objects; but in the winter months it will be difficult to obtain an adequate supply of objects for examination by the pupils. This period might be usefully occupied in lessons introductory to the work of the higher standards: the nature and uses of water, air, and food materials form perhaps the most useful and interesting subjects. The lessons on water should involve the consideration of its sources; the work done by a stream, a river, and the sea; the change of water into ice and steam; the evaporation of water; the presence of its vapour in the atmosphere and the formation of clouds; the dissolving properties of water; its uses as a food; and the large amount of water present in nearly all food materials. The lessons on air might include some very simple experiments to show its reality and the pressure it exerts, leading to some first ideas as to its weight when hot and cold, the effects of heat upon it, and its relation to burning and breathing. A few of the typical food-stuffs, such as eggs, flour, and sugar, might also be considered, with the object of showing that they are all combustible, and contain carbon and a considerable quantity of water. Such a course of illustrated lessons in Standards II. and III. would do much to ease the difficulty of more systematic work in higher standards.

It is needless to say that the teacher who is to give the first ideas on these subjects to young children must be at least as well qualified as the teacher of more advanced work in the higher classes of the school. A more systematic and connected treatment will commence about Standard IV., and must of necessity begin with careful lessons in the measurement of size and weight.

In the endeavour to suggest a better correlation between instruction in physical and biological science, it must not be assumed that the Committee fails to realise the great importance of the latter. The neglect of the study of outdoor life that huge classes and the methods of the "results system" have engendered is to be deplored, and in a previous Report the Committee has strongly advocated the employment of more scientific methods of instruction in this branch. English nature study is largely based upon the writings and methods of American teachers, and the wave of enthusiasm which has spread from that country has brought together with much which is admirable much which is unsound and superficial. The neglect of experimental methods of inquiry in the teaching of physical science is one of the weakest points in the curricula of American schools, and in consequence their school nature study has suffered. At any rate it should not be forgotten that Nature is concerned with dead as well as with living matter, and that a knowledge of the transformations of the former is essential to the study of the latter.

N.U.T. NOTES.

BY ALLEN CROFT.

I HAVE just completed a careful, and not at all unsympathetic, perusal of the circular recently issued by the Board of Education to Local Education Authorities on the question of "student-teachers."

Student-Teachers.

The man in the street, whose blessed privilege it is to remain ignorant of Education Codes, would read this circular with both interest and delight, and perhaps vainly imagine that in Sir Robert L. Morant the nation possessed a valuable public servant, whose wise counsel and thoughtful guidance were ever at the disposal of Authorities anxious to carry out their responsible functions with the greatest benefit to the community. What this "average man" would not recollect is the unpleasant fact that in the last two Codes of Sir Robert L. Morant *the student-teacher is deemed "equivalent for the average attendance" of forty-five children* under the terms of Article 12 (*a*). True it is that this year a footnote states that "after July 31, 1909, this number (45) may be reduced;" but *reduction* is not what is needed—the student-teacher's staff value ought to be entirely eliminated from the Code.

* * *

WITH the knowledge that the student-teacher, whose attendances are expressly limited to "not more than eight meetings in any one week," is yet deemed sufficient (for Code staffing purposes) for fifty or more children on the registers, Sir Robert L. Morant gravely says:—

A few Gems.

(*a*) "Except in specially organised schools, no attempt should be made to put student-teachers in charge of classes, or to entrust them with regular teaching in any subject, until they have been long enough in the school to see how teachers of experience handle their work."

(*b*) "At first they should be kept watching the teacher, and helping with small tasks, such as assisting class teachers in the revision of exercises, the assembly and dismissal of children, and the supervision of them in the cloakrooms and playgrounds."

(*c*) "It must, however, always be borne in mind that *they are present in the school for their own edification, and not in order to lighten the duties of the ordinary staff.*"

(*d*) "It is particularly important that the classes should not be too large, in order that the beginner may not find himself overwhelmed or led astray by the mechanical difficulties attending the management of more than some thirty or forty children."

A year and a half ago I thought I had convinced Mr. Reginald M'Kenna, in his own room in the House of Commons, that it was totally impossible to allow the student-teacher to count on the staff *at all*. Later events rudely convinced me that I had reckoned without my host, without the power behind the throne, whose name has been already sufficiently mentioned in this month's instalment of "N.U.T. Notes."

THE Publishers would be glad to hear from any reader of our journal who may have copies of the *Practical Teacher* for January and December 1902 for disposal, with price of same.

THE ENGLISH PRE-RAPHAELITE REVOLT.

BY J. H. YOXALL, M.A.

WHEN on the wall of the room above the little dealer's shop I saw shining out, amidst fifty frames of rubbish, an oil-painting of two figures, father and daughter, clinging together in a moment of emotion, and all the details of costume and the accessories painted with meticulous finish in rich colour, I said to myself "Pre-Raphaelite!" and for ten shillings I joyously carried the picture away. Under the dust at the back of it I found a label, and under the grime on the front of it a signature, which told me that the picture was a bit of the early work of a still living artist of renown, done in his youth, at a time when "Pre-Raphaelitism" was influencing every Dick Tinto in England who had brains and education enough to understand what Pre-Raphaelitism meant.

THE MEANING OF IT.

Now, what *did* Pre-Raphaelitism mean? It took its rise in 1848, too long ago for most of us to remember, and it did not last as an entity very long. Profoundly it influenced English painting, and does so to this day, but more by permeation and suffusion than by solid permanence as an accepted ideal and a school. Mr. Holman Hunt, the last survivor, has lately written that "our exemplars in letters had all been in accord to prune English imagination of unwholesome foreign precedent, tawdry glitter, and theatrical pomposity, corruptions which had descended from the attitudinisers of the two earlier reigns." But the "precedent, glitter, and pomposity" which the Pre-Raphaelite Brotherhood—Holman Hunt, Millais, D. G. Rossetti, Woolner, W. Rossetti, J. Collinson, and F. G. Stephens, who added the cabalistic letters P.R.B. to their signatures in paint or marble—attacked had descended from Raphael himself! From *Raphael*, whom almost all the world had learned to acknowledge as the greatest of artists, the very divinity of art! What audacity! It is safer now, and less unusual than it was then, to give the premier position to Rembrandt. "Truth" was the chosen motto of the P.R.B., and in the lovely painting by Raphael they saw only "posturing and beautiful deceit."

"Let us get back to the ideals of art as they were before Raphael misled the world!" was the cry of the P.R.B.: it was as if musicians were to cry, "Away with Mozart's Masses; let us get back to the prayers of Bach and Palestrina!" For a religious motive lay—of course it did, religious motives lie *au fond* of everything—at the base and root of the P.R.B. movement. To make this clear let me translate from a French critic, M. Chesneau: "Does anybody remember a singular picture shown at the Paris Exposition in 1855, entitled 'The Light of the World'? It represents our Saviour, lighted by nothing more than the faint gleam of a lantern, advancing through the darkness of the night, bending under the weight of a glorious crown of gold interwoven with thorns. He proceeds, like a divine Diogenes, to knock at various doors, in order to discover the dwelling of the righteous. It is a curious conception, bold in its delicacy of idea, and in no way repulsive. On the contrary, it is imbued with extraordinary religious feeling, a deep sense of melancholy, and, as it were, a softened echo of that bitter sadness which affects us when we read of the Passion In this

picture we see the most faithful carrying out of the Pre-Raphaelite principles and doctrines: the artist was Holman Hunt."

Now let us look, by way of illuminating contrast, at one of Raphael's pictures, the "Marriage of the Virgin," which is in the Brera at Milan. The background is a formal Roman temple, with great flights of steps; the Virgin and her maidens are clad in Roman draperies, most daintily arrayed; both she and St. Joseph stand in elegant and studied posture; the rabbi watches the putting on of the ring as if it had to be done in one certain way and no other, to be legal; and in the right hand of the foreground a young Italian dandy is introduced, breaking a wand across his lifted right knee, apparently for no other purpose than to show beautiful lines and curves, and to give the picture a balance. It has a religious subject, but it is not a *religious* picture at all. That was the kind of painting, magnificent in technique, lovely in line, and splendid in colour, which Raphael introduced, and which his followers sought to imitate; but that was the kind of painting which the P.R.B. denounced as false to art as well as to religion. They looked upon Raphael as "the first traitor to religious art," and as "the first apostle of the illusory style," a professor of "posturing and beautiful deceit." And they were not alone in that conviction. There had already been a German "Pre-Raphaelite" revolt, under painters called Overbeck and Cornelius. Ford Madox Brown had come into touch with that at Rome, and he—the first and greatest of English "Pre-Raphaelites," though never a member of the P.R.B. himself—had brought the idea to England.

The Artist's Mentality.

For those of us who are not painters it is difficult to understand what a movement like this could signify mentally. We are accustomed to know of and understand some similar movements in literature. We know how Wordsworth, Coleridge, and the Lake School rebelled against the classic traditions in poetry imposed by Pope and continued by Hayley; we have heard of Victor Hugo's protest against Racine in the French theatre, with his *Ruy Blas;* in our own day we have seen the Naturalist and Realist schools of fiction—Zola in France, Howells in America, and George Moore in England—level their lance against the Romanticism of George Sand, Hawthorne, and Charlotte Brontë respectively. But we hardly realise, we non-painters, that an artist with the brush has the same kind of brain, and as much of it, or ought to have, as has the artist with the pen; your painter, if he be more than a copyist and dauber, must think, must have his theories about his work, must have his artistic conscience, as well as his manipulatory skill. Let us get out of our heads the current and persistent English idea that pictorial aptitude is merely a "gift" peculiar to a few, and that the few paint because they can't help it, and do not know about their art intellectually. The reason why so many thoroughly bad pictures pass muster in England is that English people—I do not mean that we are alone among nations in this—do not look for intellectuality in a picture. We like a picture that "tells a story," but we do not look to see whether it tells the story of the painter's mind.

We have seen in M. Chesneau's description of the picture how Holman Hunt *thought* about "The Light of the World," and how little thought apparently there is in Raphael's picture at the Brera. Let us see how Ford Madox Brown thought out one of his pictures. In 1843 he executed a cartoon for the decoration of the Houses of Parliament: it represented the body of Harold being brought before the Conqueror on the field of Hastings. This is how the artist himself explains it: "Excessive and exuberant joy is described by the old chronicles as possessing the Norman host after the victory. This is shown variously in the demeanour and expressions of the conquerors. Harold was a more than usually large and athletic man, even among Saxon heroes: three men bear his body to the victorious duke. All that are left alive on the scene are Normans—no prisoners were taken. Quarter was neither expected nor given. One ancient knight, somewhat of the Polonius kind, with raised hand, seems to say, 'Here indeed was a man! In my young days,' etc., etc. Others seem of the same mind. One of William's attendants, of the waggish sort, catches a silly camp-boy by the fist, and exhibits its puny proportions alongside of the dead Harold's hand, still with the broken battle-axe in its iron grasp, drawing a grim smile from the Conqueror. A fair-haired Norman officer, regardless of the fact that his body is gashed pretty freely with wounds, twists about to get a sight of Harold. The monk who is dressing his wounds, tired out with much of such work, surlily bids him to be quiet. Friends join hands, glad to meet again after such a day. A father supports his wounded son. In one corner, embraced in death-grapple, lie the bodies of a Norman and a Saxon; one has stabbed the other in the back, while he in turn has bitten his adversary's throat like a dog. Beachy Head, which is just perceptible from the scene of the battle, appears across the bay in the extreme distance. The effect is after sunset."

Realism in Vain.

You see that Ford Madox Brown *thought* his pictures out, and knew very well intellectually what pictorially his fingers were doing. In the works of Raphael's followers you see that they cared little for such things as those; what they cared for were colour and line and prettiness. Mr. Holman Hunt says that the P.R.B. respected and admired much that had been done by Raphael. Let us hope so: Raphael's style and work were the result of great genius, and we must not hold him responsible for the errors of his copyists and followers, of course.

Realism, naturalism, clear conception of accessories, and faithful rendering of them, were the notes of Pre-Raphaelitism here: how far all that is from the Impressionism I described in a former number! Yet the P.R.B. could make no absolute claim to truth in their conceptions of a picture, however realistic their painting of objects might be. Holman Hunt was realistic, as well as poetical, in his "Scapegoat," when he rendered the iridescent colour of the bituminous and oily surf and shore of the Dead Sea. But when he exhibited "The Finding of the Saviour in the Temple," after five years' search into authorities so that all the details might be historically right, and could boast to those who knew that even the painted stockings were historically correct, a Jewish lady, carefully examining the picture, said, "It is very beautiful, but the artist is unaware of one distinctive feature in the tribe of Judah: the doctors of the Sanhedrim here possess the flat feet of the tribe of Reuben; the men of Judah had a very high instep." And after that it is small wonder that some of the P.R.B. took to painting ideal figures, without much care for details, as Raphael had done.

Our Art Section.

SOME WELL-KNOWN BRITISH MEZZOTINTERS.

IX.—WILLIAM WARD, A.R.A.

BY W. E. SPARKES.

HAPLY, when one remembers the many fine and many more indifferent mezzotinters who, between a hundred and a hundred and fifty years ago, were turning out their engravings by the score, one imagines the age to have been the heyday for British art and British artists; for those were the days when even engravers died worth their thousands, and left charitable bequests.

Perhaps it is needless to say such a picture is a little overcharged with rose-colour. Thackeray wrote feelingly of that happy Augustan period a few years before, when visiting angels knocked timorously at the windows of literary gentlemen, with offers of deaneries of St. Patrick's, or of lucrative positions in the Pipe Office, where the work was light and the salary secure; though he did not forget to mention the hopeless hacks in Grub Street, where the poor scholars without aristocratic influence proceeded to starve in an attic. Who can forget Hogarth's "Distressed Poet," seated under a picture of the silver mines at Potosi, and invoking the muse to send him golden lines that may sufficiently flatter some "wine-bagged-cheeked" lordling, to help, at least, pay off the bawling milk-woman shouting for the payment of her little score?

The truth seems to lie somewhere between. Engravers who were fortunate enough to hit the public taste, or strong enough to form it, were in much better case than engravers had been or were afterwards likely to be; while the restricted field made the misery only the more intense for the unappreciated men. Samuel Cousins dying with a fortune, and David Lucas buried in a pauper's grave—the common criss-cross story of fate.

William Ward, born in London of poor parents in 1766, was fortunate enough to be among the apprentices of Raphael Smith, the popular mezzotinter, print-seller, and former linen-draper; and as his master naturally expected the apprentices to keep as close as possible to his own methods of handling, it is not surprising to find that young William Ward's early mezzotints can hardly be distinguished from Raphael Smith's. Indeed, it is pretty safe to say that, among the scores of engravings issuing from Smith's workshop and over his name, many came almost completely from the hands of Ward and his fellow-apprentices; for these youths were afterwards to be distinguished from other mezzotinters by Raphael Smith's excellences—vigour, truth, and simplicity of work.

Ward's father died when the boy was young, leaving a widow with several children, among whom was that curious, wayward genius and future Academician, James Ward, the animal-painter, visionary, and (if his letters are any criterion to the real man) most angular and complaining Gummidge in the history of British art.

When William Ward's 'prentice days were over, he removed with his mother and two sisters to a country cottage at Kensal Rise, where poor George Morland often visited him, coming up the country path which then led from Paddington. It may be recalled that Morland and Raphael Smith were boon companions, so that the quiet young Ward had made Morland's acquaintance very early in life, and now made him welcome to the country cottage. To cut the story short, Morland married a Miss Ward, and William Ward married a Miss Morland.

So far as art is concerned these facts are interesting. They explain why the two men became so intimately connected in their work; for, in considering mezzotints, to mention George Morland is to call William Ward instantly to mind. Others, such as Raphael Smith,* engraved pictures by Morland, but none were so superbly successful as his brother-in-law. Smith's handling—his breadth, simplicity, and freedom—were admirably suited to the painter; but William Ward was even more successful in maintaining that rustic strength and at the same time delicacy in colour and shade for which the originals are noted.

William Ward's life was evenly uneventful and prosperous. It is reflected in his sane and steady mezzotints, which were indeed varied in subject—some after the old painters, Bol, Correggio, Murillo; some after British portraitists—Reynolds, Gainsborough, Romney, Geddes, and others; and about forty large plates (and these containing his most characteristic work) after George Morland. It is even asserted by one writer that, not content with exploiting poor Morland in other ways, Raphael Smith had set his apprentice, William Ward, to copy Morland's pictures in oil, and sold these afterwards as original works.

This may be true or not. If only a tradition, it is valuable in explaining the success of Ward in translating Morland so faithfully. But it would be a mistake to think his reputation is based entirely upon such translations. The two fine plates reproduced here show how supremely clever he was in portraits.

"SIR DAVID WILKIE." (By Alexander Geddes.)

Some men have not yet come into their own. Reynolds, Gainsborough, Romney, Lawrence, Raeburn, and many others have a recognised station, but Alexander Geddes seems to be strangely neglected. It is only of late years, and among those who have had an opportunity of seeing thousands of etchings, that his supreme skill in that branch of art has been acknowledged; while, it is safe to say, this Scottish artist will still further advance in favour. His portraits are not only skilfully painted, they are admirably composed in line and colour, and, above all, they are full of character. This full-length of Sir David Wilkie may be taken as an example. The easy and natural pose of the raw-boned artist is interesting as a composition. We are evidently introduced to his studio with its "practical

* See *Practical Teacher* for September.

"Sir David Wilkie." (Alexander Geddes.)
(Photo by H. Koester.)

accessories"—a lacquered screen; an elaborate carved sideboard; the chair (embroidered with a rustic scene, charming for its feathery trees and willow-plate lovers) in which so many of Wilkie's clients had sat for their portraits; the silk drapery, so indispensable as a background for the retired grocer or comfortable cit, as suggesting wealth and magnificence—and, at the side, the painter's maulstick. Here, in the midst of his *impedimenta*, the artist stands arranging in his mind's eye the "Village Festival" or "Blind Man's Buff," or some other painting that was to take the town by storm. and one feels that Geddes has painted Wilkie as he knew him and would have the world know him too. He does not omit even the bagpipes, with which Wilkie consoled himself in times of depression, much to the exasperation of his neighbours. For Wilkie would show himself an accomplished man in more arts than one; and Geddes (I think) has left a pleasant account of his Scottish friend going stolidly through the steps of the minuet, which he had set himself to learn as a fashionable man, and which he danced with a funereal air, giving unbounded delight to the spectators. Altogether

"THE LAUGHING BOY." (MURILLO.)
(Photo by H. Koester.)

But skilful as this use of coloured objects may be (to say nothing of the artist's magnificent dressing-gown), they do not distract the attention from what should always be the centre of interest—the head. Geddes has admirably caught the shrewd common sense for which David Wilkie was noted, as well as that keen observation everywhere apparent in his work; while the play of a dry humour is not wanting about the lines of the mouth. Geddes and Wilkie were staunch friends. They worked together in painting and in etching; they were closely allied by nature, being simple-minded, honest, hard-working men, clever but companionable; a lovable man; and Geddes has given us a portrait with sly, humorous touches very delightful to one who remembers the relationship between the men.

William Ward's free, broad translation of this painting; his skill in distinguishing material—embroidery, silk, glass, lacquer, wool, wood, and ivory—is marked; his modelling of the face and hands, not overdone and preserving the drawing, are all alike excellent as a mezzotint. He did not shirk minute labour, as you may see in the silk fringe and the embroidered work and ornamentation of the chair, the gown, and the screen, for this was part and parcel of Geddes's intention—the

raw-boned, rustic Wilkie at his ease in magnificence; but this care for particulars does not destroy the broad swing of the drapery, and the ease and grace of the lines throughout. It may be said here that William Ward had not passed through a regular training as an artist. No doubt he had originally shown such a bent as to justify that keen business man, Raphael Smith, in taking the boy as an apprentice; and he must have learnt much in being continuously employed in copying masterpieces after the old and modern masters for mezzotinting and engraving generally.

For in his spare moments he essayed original work. At that time (towards the end of the eighteenth century) it was the fashion to issue "stipple" plates in portfolios. Often these were what afterwards, in early Victorian times, developed into "Books of Beauty"—sentimental young ladies with extremely bright eyes, elaborate hair, and a charm of manner partly copied from Greuze and partly from Sir Thomas Lawrence. In the earlier period (in Ward's time) the artist aimed chiefly at a simplicity of expression perilously approaching the inane.

To speak the truth, William Ward's "stippled" ladies are not within measurable distance of his mezzotint copies. I have just been glancing through a few. Of course the workmanship is excellent in engraving, but one soon tires of these languishing fair ones, each with her verse of minor poetry beneath—very small verse, in effective contrast to the voluminous hats they invariably wear. There is, for example, "Lucy of Leinster" with her stanza:—

> "In Leinster, fam'd for lassies fair,
> Young Lucy was the grace,
> Nor e'er did Liffy's limpid stream
> Reflect so fair a face."

Upon reflection, one is forced to the conclusion that the standard of beauty in Dublin in 1795 was not high.

"The Laughing Boy." (By Murillo.)

When, in the sixteenth century, Spain fell in with the new movement in art which sought for inspiration in nature rather than in the paintings of other men, a great school arose in the peninsula, a school for ever notable for its realism. Two names stand especially prominent—Velasquez and Murillo. Art was controlled by the Inquisition, whose office it was to watch that nothing unworthy or irreligious should appear in public, since, as one writer remarked, "For the learned and the unlearned written knowledge may suffice; but for the ignorant what master is like painting? They may read their duty in a picture, although they cannot search for it in books."

Many of the artists belonged to monastic orders. Vargas and Joanes, two of the most eminent painters, were noted for their piety; Velasquez and Murillo were sober and exemplary men; and we have it on the best authority that many artists prepared themselves for the painting of a religious picture by confession and fasting. To a large extent this accounts for the quiet, almost gloomy, character of Spanish art in the sixteenth century, at a time when Italy was astonishing the world by the boldness of her designs and the brilliancy of her colour.

Although art in the peninsula was thus completely under the control of the Church, her artists were permitted to paint the people and the scenes about them, always provided that the bounds of good taste—as fixed by the Inquisitors—were not passed. Velasquez was one of the most marvellous of portrait painters. He painted the souls of men; they move and breathe. And Murillo, though not so technically perfect, is astonishing in his power.

For he had the best of training. The son of a poor mechanic, he struggled against poverty during his youth and early manhood, gaining a scanty living by painting pictures for the market-place, where he would expose his wares to catch the fancy of some rustic passer-by. Here, quietly observant, he made endless studies of the peasants about, as poor as himself, and as happy. And perhaps nothing appeals to us more than the *human* interest of Murillo's paintings, his quiet-faced women and ragged, laughing peasant boys.

The present picture is a typical one. Such a young rogue recalls the lively youths who crowd the pages of *Don Quixote*, those shrewd rascals so admirably summed up in the figure of Sancho Panza—easy-going, material, always looking for animal enjoyments, and expressing themselves aptly on every occasion, being indeed, as Don Quixote said of Sancho Panza, "stuffed with proverbs." If you relieved them from the galley-chains they would reply to your magnanimous speeches with a shower of stones; and they would follow a knight-errant partly from affection, but largely from a hope of sharing the spoils which so doughty a champion must surely gather. Such a mischievous imp as this peeps out at you continually from Cervantes's romance, and you understand why the merry duchess in *Don Quixote* delights above all things in listening to Sancho Panza's shrewd sayings, and why the Spanish readers clamoured for a second book, content above all things "if only Don Quixote would act, and Sancho Panza speak."

It says much for English society in Ward's day that an engraver found it profitable to publish not only modern portraits, but copies of the great masters. True, Ward's reputation is founded on George Morland, but his skill in other lines had something to do with his success. For many years engravers struggled to be recognised as worthy to be elected to the Royal Academy, and William Ward was happy in being partly recognised by the supreme body. In 1814 he became an Associate in Engraving of the Royal Academy—an honour paid to few men since his day. There is much to be said on the other side. Such mezzotints as were then published were in the highest sense artistic; they revealed a native power which seems to have died out in later days, an originality often superior to that shown in the paintings they translated with such supreme success.

William Ward died in 1826. Few names among engravers stand so high, and with reason. To quote Redgrave: "His works were artistic, full of spirit and truth, excellent in feeling of colour, flesh tints tender without weakness, light and shade powerful." And these excellences may be readily traced in his clever "Laughing Boy."

Elementary Woodcarving. Office of the "Woodworker."

This is one of the series of handy manuals issued from the *Woodworker* office. It does not pretend to give a course of work, but gives many useful hints on the essentials of carving, and tools, woods, methods of working, designing, polishing, etc.

RUSKIN'S DRAWING SCHEME.

BY A. G. TOMPKINS (CULHAM COLLEGE).

(*Continued from page 84.*)

IN brushwork, too, the teacher has an important factor in inculcating that love of drawing which may induce the scholars to carry on their studies after they have left the elementary school. Colour work should be taught, because the charm of colour adds to children's interest in and enjoyment of the lesson. It gives new character to their drawing, and, above all, it stimulates their colour sense. It presents an opportunity to quickly represent mass, it conduces to carefulness of observation, and does away with that article which so often converts the drawing into a rubbing-out lesson. Nature provides an endless variety of subjects for this work. Leaves, flowers, fruit, all are suitable, while novelty may be introduced by silhouette drawing, shadow drawing, or drawing by suggestion. Colour work is not difficult: it can be taught by all who have a fair knowledge of drawing with the pencil. It is suitable for collective teaching, and is easy for the child to learn.

Probably the greatest difficulty that the teacher has to overcome is how best to teach children to observe correctly. One of the earliest lessons to be learned is how very untrustworthy is the testimony of untrained eyesight. The children the elementary school teachers have to deal with, for the most part, look and see nothing. Their senses, which should be the foundation of knowledge, are here a hindrance to it. Rapidly recognising an object from a superficial glance, they refer it to a type already existing in their minds, and are at no pains to acquire additional details beyond those already contained in that type. Children seek too much for information in their own heads. They should be taught to draw an object as they see it, not as they think they ought to see it or know it to be; and the teacher should frequently test them in order to best counteract the danger of these preconceived ideas, and see whether they are really observing correctly.

Memory drawing forms a means by which children's observing powers may be tested. "If you cannot draw a thing, you do not know it," is a maxim well worth keeping in mind. Children often think they know the outlines and shapes of familiar forms, when really they have never paused to thoroughly examine them. Ask a class of boys of about ten years if they know what a buttercup is. Possibly they will laugh at the idea. Then ask them to draw one, and notice the blank look on their faces as they try. They cannot do so unless they have been accustomed to carry forms in the memory or to observe carefully. Again, place a spray of leaves before a class, and, after a few moments' observation, see if any child has noticed whether the leaves were opposite each other on the stem, or even if they were of the same size. I suggest that children should be accustomed to look as keenly at a thing as though they were required to draw it from memory. If they did this, not only would their ideas be clearer, but the better and quicker would they be able to draw. Another useful test is to place a model before a class, or, according to the age of the children, a group of two or three models, and, after allowing a short time for observation, remove the models and let the children draw the group in correct position from memory. Remember that if a child cannot draw what he has seen, then his observation has been a blur, a general fogginess, and not worth the name of observation. In order to see whether children are paying proper attention and using their eyes correctly on an object placed before them during the drawing lesson, use also the following method. After the object has been placed in front of the class, and the children have looked at it for a few minutes, call on some child—or even two or three children—to come out, and, with its back to the object, make its drawing in chalk, as large and as quickly as possible, on the board. It does not matter if the child's lines are shaky; if he has grasped the idea of the form of the object viewed from his particular position, then he is using his eyes to some advantage. If the result is incorrect, let the child go back to its place and compare its original view of the object with the drawing, pointing out its own mistakes. If this method be used, there are two points, however, that must be carefully noted. First, the blackboard must be cleaned before the remaining members of the class commence work; and secondly, but of equal importance, before the class is required to draw, the position of the object must be completely changed, and the children must look at it again in its new position, or even an object similar to the one first studied might be used instead of using the same object after it has once appeared on the board.

Above all things, avoid the use of flat copies. Flat copies prevent the child from forming independent ideas of an object. They merely induce the copying of what others have seen, and very probably an imperfect representation of what some person has imperfectly seen. They are bad, because they shirk only too often the third dimension difficulty. Drawing from outline gives children no impression of form and no impression of mass. It is true that good flat copies may give the child some idea of elementary design, but this can be equally well obtained from the plaster model. Perhaps the best form of flat copy—that is, if it can be considered good in any form—is the photograph of some piece of good design or embroidery; but even here great care should be taken, for such photographs are often so indistinct as to seriously affect the eyesight. Ruskin uses language far more forcible when he speaks of flat copies. He says that if a child draws from the flat, it is repeating another person's work, and he adds: "All repetition is degradation of art; it reduces it from headwork to handwork, and indicates something like a persuasion on the part of the pupil that Nature is exhaustible or art perfectible, perhaps even by him exhausted and perfected." All copyists he condemns. He says: "They are all contemptible, but the copyist of himself is the more so, for he has the worst original." If the child draws at all, let it draw from the real object. Above all, never let it copy its own copies. If it does bad work when drawing from an object, and it is necessary to draw again, let the second drawing be made from a different position. Avoid flat copies, for what little good they may seem to present is obtained in a greater degree from a study of the object itself.

"Turn to common objects and to Nature," says Ruskin, for the most worthy subjects for study. Here you have a well-nigh inexhaustible collection from which to select. Cups, saucers, jugs, plates, bottles, glasses, pens, inkwells, candles and candlesticks, stones, pebbles, boxes, books, logs of wood, branches, chairs, stools, cupboards—anything will do, if it is large enough for the child to see without straining the eyesight and is

of sufficient interest. Children might bring their own objects; they are within the reach of all.

Ruskin also suggests that the child should draw from both Nature and the common object, working the two studies side by side. The leaf or bough, the blade of grass or the forked twig, all serve as subjects for the young child to work at. The spray or twig, flower or fruit, bird or insect, form studies for the older child; while the bush or tree, shed or house, or the simple view constitute objects for the more advanced pupil. It is within the reach of all. Its pale is not sacred to the artist, but is open to every one, and what is more, should be approached by every one. For the student of from fourteen to eighteen, or even older, who wishes to sketch or paint from Nature, "let him be careful," says Ruskin, "that he does work from Nature, and not from the diseased results of man's interference with her." He should go to Nature in her liberty; and if he seeks the highest and most perfect forms of beauty, let him avoid gardens and highly trimmed parks, and go in all confidence to pure Nature.

The follower of Ruskin, although instructed to draw from common objects and from Nature, is not confronted with the difficulty of learning perspective rules. Ruskin says "it would be worth while to learn them if you could do so easily," and also remarks that "they are not of the slightest use save in rudimentary work." "You can," he adds, "draw the rounding line of a circular table in perspective, but you cannot draw the sweep of a sea bay; you can foreshorten a pillar, but you cannot foreshorten the human arm." Its laws are too gross and too few to be applied to any subtle form; therefore, as you must necessarily draw such difficult forms with no aid but the human eye, surely it is possible to draw the simple objects without perspective. In drawing, as in all other subjects, practice must be in advance of theory. Let children deduce their perspective from their own work by measurement and comparison—measuring by holding their pencils in a vertical or horizontal position, as the case may be, and by getting the top of the pencil to coincide with one extremity of the object, move the thumb up or down until its tip coincides with the other extremity, and by this means comparing one measurement with another. Even if you have to deal with a child who seems to make no progress, whose prepossessions are so strong that they hinder his powers of observation, who cannot grasp the idea of form or of space, and to whom the drawing lesson is uninteresting, do not fly back to perspective rules. For such, take a sheet of glass of about the same size as the drawing-book, and arrange this in a frame, or fix it by some means in a vertical position in front of him. Then get him to sit down behind it, and providing him with a brush and a tube of colour, or anything with which he can easily mark on the glass before him, tell him to trace or sketch on the sheet of glass such objects as he can see through it. He must not alter his position nor move his head, or his view will be entirely changed. This exercise is of value, for it obliterates from the mind of the pupil while engaged in his task any notions he may have on perspective, and it is something novel and unusual, and as such alone will interest him. Also, the child will find that by its aid he can get a result that is correct—perhaps the first drawing he has ever made that has looked anything like the real object—and this will encourage him. He will, as it were, have an ideal to aim at, and this, too, an ideal he no longer regards as beyond his grasp. In addition to this, it trains the child to observe minutely and accurately, and is practice in freearm drawing. That the exercise is not suitable for general adoption in all drawing lessons and for all children, and that its use should be limited, is true, but it is well to note the care that children take when using this sheet of glass before the idea is scorned or it is condemned as too mechanical. Lastly, do not use perspective, for it kills the child's individual judgment, and it never seems quite accurate. Its rules are too stiff and formal. Let the child use his eyes, and if he does this correctly his drawings must necessarily obey perspective rules.

The whole system of instruction advocated by Ruskin is really what may be called a "look and see" method. If children look carefully, they will be able to counteract the danger of prepossessions and see objects as they really appear; and, says Ruskin, "when once we see clearly enough, there is very little difficulty in drawing what we see."

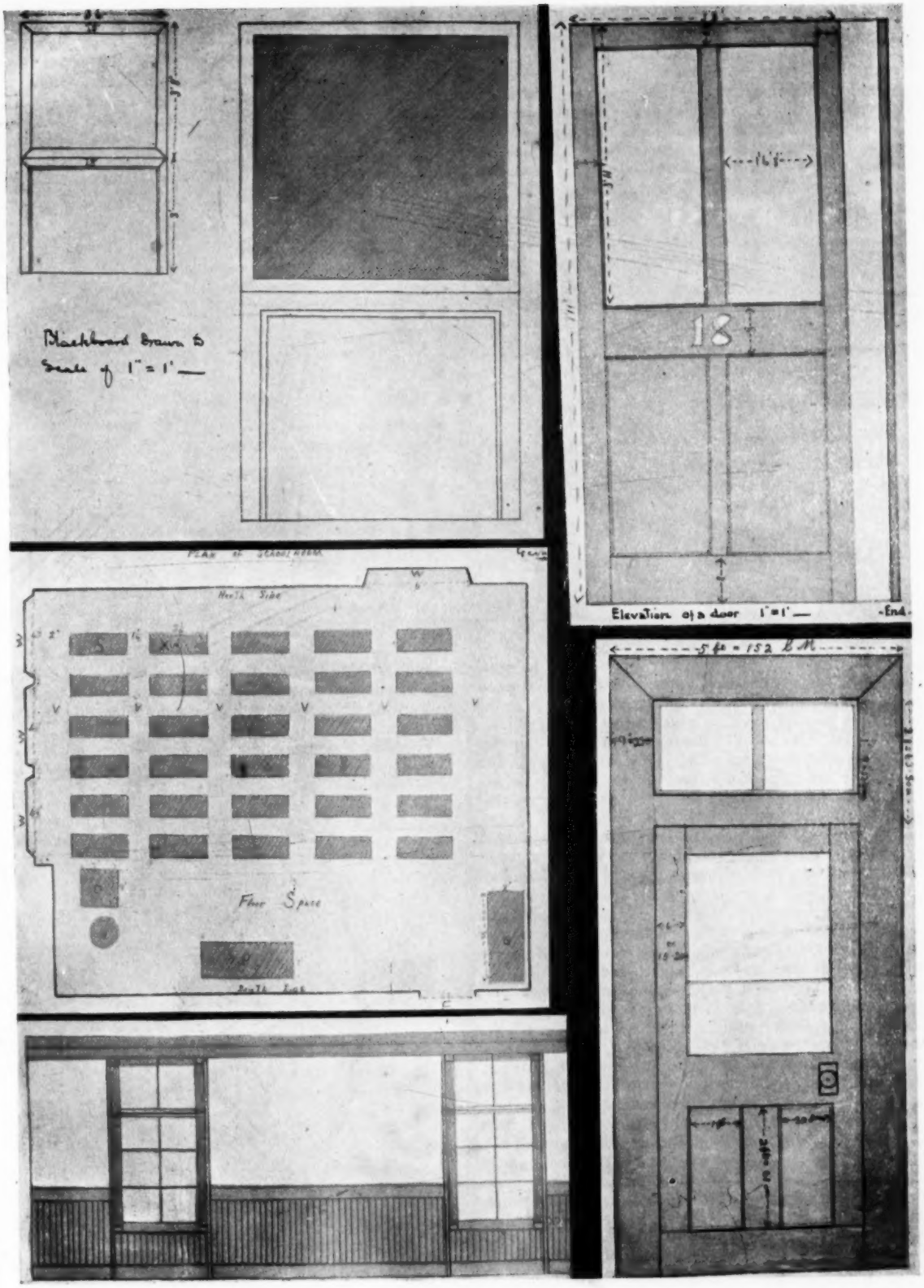
PRACTICAL DRAWING LESSONS.

CLASS IV.

Scale Drawing and Design.

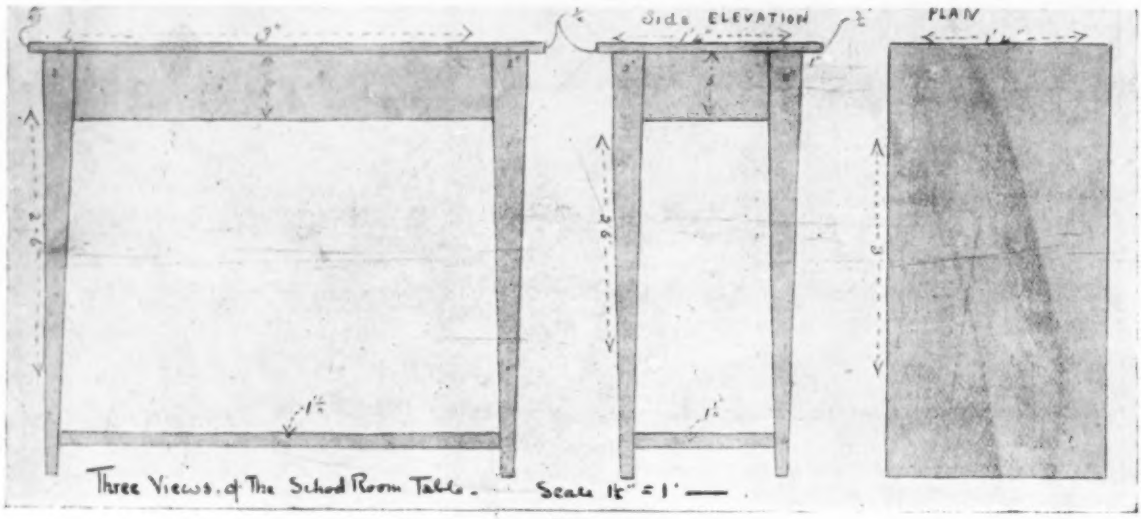
IT is usual in Class IV. to take a little scale drawing. In a higher school this is sometimes done as a part of the course in mathematics, under geometry, or in the workshop, under the manual instructor, but more often it is left to the time and care of the teacher of drawing. Occupying as he does the mean position between the theoretical and practical sides, he is doubtless the best man for the job after all. In the elementary school there is not this difficulty, as the pupils generally receive all their lessons from one teacher. Girls, as a rule, do not take to scale drawing, while boys, on the other hand, like it, and it requires original ideas and some enthusiasm on the part of the teacher to make it an interesting subject of study for all. That it is useful there is not the shadow of a doubt, for "*to measure is to know*," and scale drawing simply means the taking and recording of absolute measurements. It is an interesting development of the ruler work of the lower classes, and an introduction to higher work in mathematics. This in effect is equal to saying that if it is to be done at all, it should be done thoroughly and well. The examples given with these notes were collected from the class work of a few schools; they do not illustrate a gradual scheme of lessons which one may follow with a class, but rather show what might be aimed at, and the measure of success attained to in Class IV.

In these days when Government inspectors go about asking pertinent questions, it is absolutely necessary for a teacher of this subject to make clear to his pupils what scale drawing means, what it is for, who makes use of it, what is a scale, how is it made and used, and many other apparently useless, though really very necessary, questions. There need be nothing of a drudge in all this; indeed if these questions and the proper bearing of the subject is made clear as the lessons proceed, the study will become one of great interest and lasting benefit to all concerned. Too often the pupils are led through a series of unrelated exercises without having the aim and use of it all explained to them. Because it is a subject which all do not



SCALE DRAWING.

appreciate at first, this is a very necessary step. There are so many ways this may be done, the teacher need not be at a loss for a suitable introduction to his subject. Should he be, he could not do better than make a beginning with some or all of the questions given above. He will show how necessary it was for the architect to draw plans of the school building to scale before the builders started work upon the fabric. All ships and engines are first drawn to scale before they are made,



SCALE DRAWING.

and such drawings are generally planned to a small scale. On the other hand, makers of wearing apparel draw to full scale, while a watchmaker may have to work to a larger scale than that of the thing which he makes. He will show the proper method of setting out the necessary lines, in which sizes are marked and named, according to the *Representative Fraction*, where to place zero and other figures for the correct reading of the scale, and, finally, show how it is used.

In doing this he might make three drawings of a simple large envelope, and show what sort of a result is got by using a scale of one, a scale of $\frac{1}{2}$, or a scale of $\frac{1}{4}$, and so on.

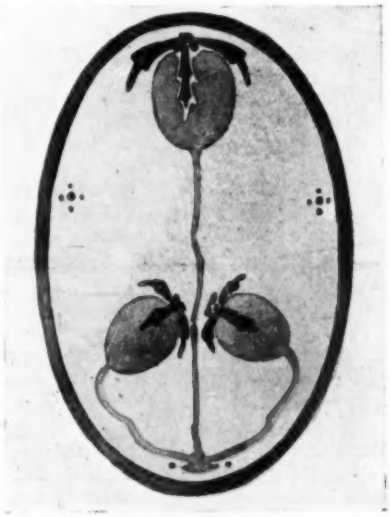
The measurement, calculation of proper scale, and drawing of one or two views of a big book or slate will be quite a good enough exercise for the pupils to begin with. Boxes, simple desks, and other furniture, the schoolrooms, corridors, playground, etc., may follow; and lastly, round articles in plan, elevation, and section may finish a course sufficiently broad to cover all the work that can be done with Class IV. A wise teacher will correlate his scale drawing with object drawing, and explain fully the difference between the two methods of representing solid things upon flat paper.

Though some of the drawings may be done from dictation, or from a dimensioned sketch put upon the blackboard, it is essential that the pupils deal mostly with actual things. They should handle the article to be drawn, take their own measurements therefrom, and calculate their own scale to suit the paper they work upon.

It is a good plan to give in some of the simpler objects —say a cocoa-tin or a match-box—some inkling of superficial area and measurement by developing the surface, cutting out and folding the parts, to show how such things are put together.

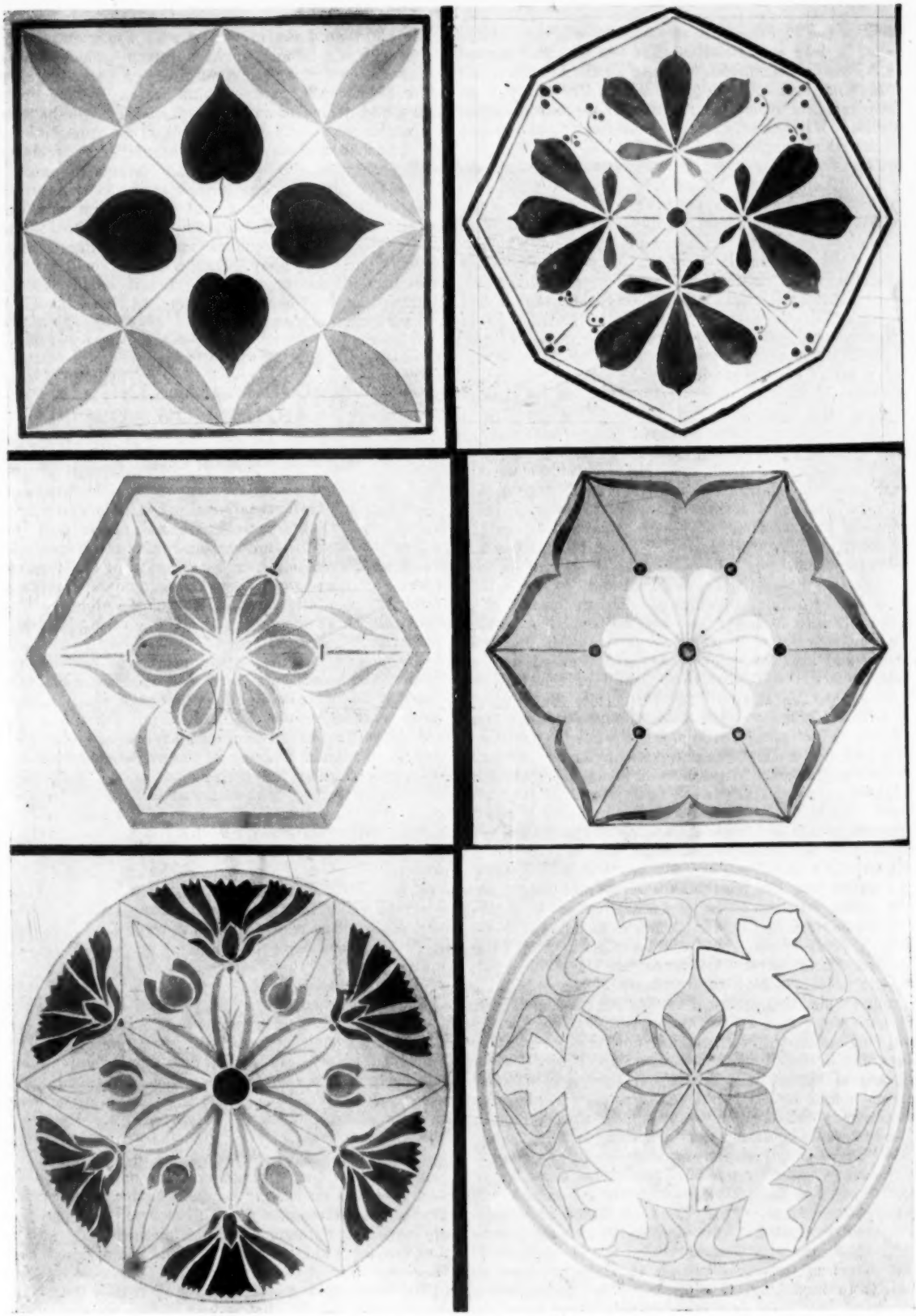
It is just possible that there is in all this far more than can be overtaken in Class IV., but as I have no intention of returning to this subject, I merely indicate the trend of the lessons, and show how the study might be developed. Without some such practical application, the good of scale drawing is apt to be soon lost. Of course boys who take manual work get enough of this, and girls who have lessons in cutting out in connection with their sewing may also be able to turn their experience in scale drawing to a useful purpose.

There is, of course, very little time to expend on the "*planning of pattern work*" when so much has to be



ELLIPTICAL UNIT.

overtaken in object, nature, and scale drawing. It is an easy matter getting it into the lessons of the younger classes, and as it is again very desirable as part of the



DESIGN—ARRANGEMENT OF UNITS.

work in the higher forms, it would be a great mistake to let it drop out anywhere if it can be at all carried on. It is difficult to do justice to all the branches, and if anything must be dropped, I would certainly forgo these exercises rather than neglect or penalise the other studies. Many, however, find time for it, and produce results which amply repay the effort.

Notwithstanding this, I am just afraid that the essential point which makes it a good occupation educationally is lacking in most schools. I refer to the actual application of derived forms to the ornamentation of some object which already exists or which is projected by the pupil. Real ornament has no separate existence, any more than the accompaniment exists apart from the song. I fancy also that the eternal repetition of the juggling trick with floral forms in geometrical-shaped spaces must soon become tedious, especially if the effort goes no further than the bit of paper on which the pupil does the pattern. I would, therefore, put forward a very strong plea for the retention of this exercise, but in a modified form, which would raise its position, so that it may really deserve and command the title Design.

What I mean is this: page 191 contains some six exercises, which are all admirable bits of work so far as arrangement of units within the given space and neatness of execution go, yet they have little lasting interest, and I question if the pupil benefited much by doing them.

Contrast this with the elliptical unit on page 190. This is a working drawing showing the shape of a piece of linen which a girl will cut out to a certain size; the original drawing indicates the measurements and also the colour. A simple unit of decoration, suggested by a previous study of the fruit of the dog-rose, is arranged in this ellipse, to be sewed in silk, according to plan, colours, and stitches, given also in the original drawing. The whole is to stand as a badge or mark of ownership for any article to which it can be attached. There is space for initials if such an addition is necessary. In all it is just a stage of the work, a means to an end, and the pupil must see it through to that end, from the conception to the finished product. This forms an exercise which is quite within the capacity of any girl of ten years of age or more. No matter how humble the effort, it is real design, and not flirting with one of the least important sections of it.

I would not banish the exercises in space filling—they have their use—but would gradually drop them for something better. Of course all the children do not do sewing, but there are plenty of other channels through which this practical application may be carried. Perhaps the pupils are fortunate enough to take woodwork or cardboard work, and if not, they may all at least cut a stencil plate for direct application to the surface of almost any article. If they are not able to make that article for themselves, many will gladly purchase it and bring it to school, so that they may do the actual decoration upon the thing itself. I chose this "*badge of ownership*" exercise because it is such a necessary thing for pupils of a school. Their books, their coats and hats, their instruments for games, and many other things, must bear their name or initials. They will be none the worse for having this mark done with something approaching neatness and beauty. If the school is fortunate enough to have a course of lessons in modelling, this opens up a possibility for pupils to develop their original ideas of form in solids. The effort need not involve much; some simple exercise, such as a handle, might be given—a handle for an umbrella or walking-stick, a drawer or paper-knife, etc. Small dishes or paper-weights are easily managed in clay, and a fund of suggestion for such might be found in a glance at some Japanese collection of such things. A cartouche or shield form with a number, or an electric bell push, may also be within the powers of pupils of Class IV. Many other suitable subjects will present themselves to one who makes a beginning with such work. I feel sure that if such a course were followed in design, the work would be much more interesting to teacher and pupil alike. Such a course would certainly eliminate all dreary repetition, and it would stimulate thought, and to a certain extent teach the lesson of reliance upon one's own ideas.

MANUAL TRAINING IN GLASGOW.

BY WILLIAM HUME RODGER, WOODSIDE INTERMEDIATE PUBLIC SCHOOL, GLASGOW.

THERE have been so many admirable articles on manual training appearing from time to time in this journal that it is with a certain amount of hesitancy the writer approaches this much-written-of subject. Nevertheless, an interchange of ideas on any special branch of work is good, as it tends to create new interests, and affords a chance of selection—a most desirable thing where the education of the young is concerned.

To make these articles more complete for the casual reader, and before going on to consider the actual work done in Glasgow, it might not be out of place to make a few remarks by way of introduction.

Most of us have seen and experienced the rapid growth of manual training in the public schools of this country. At first the subject was only experimental, and little interest was shown. In fact, it came in for a great deal of adverse criticism, due, no doubt, to its resemblance to a trade, and also to the sweeping departure from the ordinary school routine. But as time went on interest was awakened, for it was seen that manual training was both immensely interesting and highly instructive to the child. Now that its educational and industrial values are recognised, even the most fastidious agree that it deserves its place in the ordinary work of the school.

Manual training is a *method* of education, and aims at the development of the individual, the hand, eye, and brain being trained to work harmoniously and concurrently through the making of concrete objects. It affords a direct training in connected thinking and intelligent application, and no one on examining a well-finished model can doubt that it is a story beautifully told in actions.

As a school subject it has much to commend it, for the knowledge gained can be applied to the other school subjects, and also to whatever trade or profession the boy takes up on leaving school. Modern life requires us to have strength of will, resource, and practical ability; and if manual training methods help in producing a more independent and capable individual, then they serve a most useful purpose.

To understand all this more effectually one must know something of what is involved in the production

of visible work under proper guidance. A boy has sharp tools and a piece of rough wood placed before him, out of which he is to make some object previously drawn to scale. The attractions are irresistible, and he experiences the impulse of action. Here is a problem to solve, and the means to do it with—a piece of rough wood, sharp tools, and *himself*. The ordinary boy simply rushes at the work without thinking, and straightway spoils it; but after one or two failures he sees that if any progress is to be made he must proceed in a more rational way. He soon learns from sad experience that if he proceeds to act before thinking, the model will show up his want of thought to an alarming degree, consequently the boy is forced to think and plan out his work in an orderly manner before acting. His thoughts must not be hazy, but real, crisp, useful, connected thoughts, capable of being immediately transposed into definite actions. Here, then, we have a healthy action of the brain, where connected thinking is developed and the *will strengthened*. Through the tool operations a healthy action of the muscles of the body is guaranteed, and all through the work the boy is developing the fine nerves and muscles of his hands so necessary to execution of every kind.

FIG. 1.—A CLASS AT WORK.

In working away with the model the boy learns to observe with his eye, for is he not continually scrutinising his own work and learning where to look for mistakes? The model must be true to a standard, and the boy, working up to this, realises the true meaning of accuracy and truth, for the model must either be made right or wrong. He becomes industrious, because he sees the result of industry. He becomes self-reliant and resourceful, because he is continually accomplishing something through his own exertions, and overcoming fresh difficulties. The least untruth of hand, eye, or conception is at once photographed on the model, and laid bare for the consideration of the teacher, whose duty it is to discover, by the results of the boy's efforts (the model), how and why he fails.

Suppose the boy's mental faculty of accuracy is at fault, then the surfaces of the model will be unfair, and possibly tapered; the curves (if any) will be lop-sided and uneven; and the measurements will be incorrect. The teacher, seeing all this, proceeds to strengthen and cultivate this weak point of the boy's character by careful suggestions and example, until he (the boy) is able ultimately to execute exact work. Thus accuracy is fostered; and the same thing applies to the other deficient mental or moral faculties.

FIG. 2.—VIEW OF CLASSROOM FROM PLATFORM. WOODSIDE CENTRE.

Here is a magnificent opportunity for character building, for training those habits which go towards the making of a good, useful, intelligent man. Instil the thought, and it will lead to a choice; encourage the choice, and it will become the act; repeat the act, and it will form a habit; continue the habit, and it shapes the character.

Professor James, speaking of manual training in his *Talks to Teachers on Psychology*, says: "The most colossal improvement which recent years have seen in secondary education lies in the introduction of manual training schools; not because they will give us a people more handy and practical for domestic life and better skilled in trades, but because they will give us citizens with an entirely different intellectual fibre. Laboratory work and shop work engender a habit of observation, a knowledge of the difference between accuracy and vagueness, and an insight into nature's complexity and into the inadequacy of all abstract verbal accounts of real phenomena, which, once wrought into the mind, remain there as lifelong possessions. They confer precision, because if you are *doing* a thing you must do it definitely right or definitely wrong. They give honesty; for, when you express yourself by making things, and not

by using words, it becomes impossible to dissimulate your vagueness or ignorance by ambiguity. They beget a habit of self-reliance, they keep the interest and attention always cheerfully engaged, and reduce the teacher's disciplinary functions to a minimum."

It is now about sixteen years ago since manual training was introduced as a means of education by the School Board of Glasgow. The subject passed through the initial stages in John Street City Public School, under the headmastership of Mr. Adams.

As there was no provision made for a workshop in the building of this school, an ordinary classroom had to be fitted up for the purpose. This was successfully done, and the classes were arranged to meet twice a week in the afternoon. Into this classroom eager boys poured, finding that here, at least, was something they really wanted to do; and it will not take much thinking to imagine the stories carried home about "manual" work, and the parents' surprise and wonder at their boys being taught a trade, and, of all places, in the school.

The experiment was a great success, and in the following year a centre was opened at Dalmarnock Public School, nine different schools contributing.

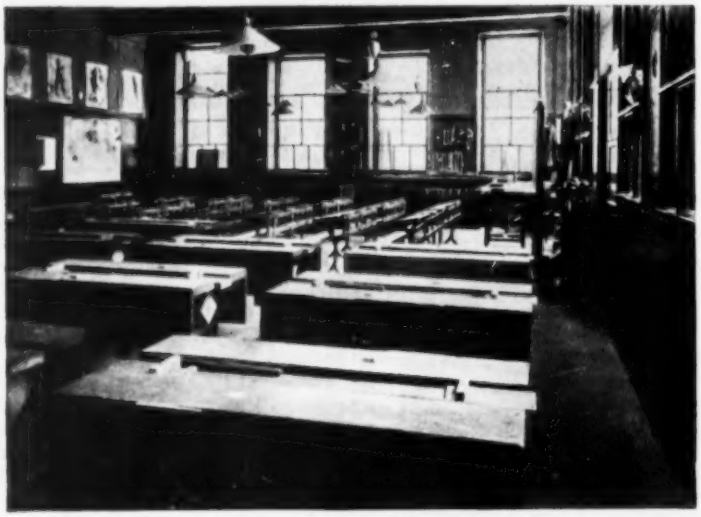


Fig. 3.—View of Classroom looking towards Platform. Woodside Centre.

The enthusiasm shown by the boys and the forward policy of the Board led to new, well-equipped centres being opened in different parts of the city in rapid succession, with the result that at the present time—sixteen years after the first introduction—there are twenty centres, embracing seventy-three different schools, and about 6,000 pupils.

With regard to the classrooms, everything possible is done to make them bright and attractive. Two photographs of a typical room are shown.

The decoration round the walls is the work of the teachers in charge, and has special reference to the "scheme of work" followed. Each press panel is mounted with a separate "tree story," showing the fruit, seedling, winter and spring twigs, leaves, and flowers; while round the walls, models, tree pictures, sections of trees, drawings of magnified sections of woods, leaves, etc., serve their purpose as teaching aids. It is surprising the amount of interest a boy shows for objects or illustrations connected with manual training. Each classroom, as a rule, is furnished to accommodate thirty-six boys. A general idea of the furnishings can be obtained from the preceding photographs. The drawing-desks are similar to those provided for the ordinary classrooms, but, in addition, each pupil has before him a fixed drawing-board, with a space beneath for the drawing envelope, a collapsible rack for holding sketch in position, and a material-box holding a pencil, rubber, pins, compasses, rule, and set-squares. At the back of each board the T-square is fixed. This arrangement prevents loss of time and movement, and is a good object lesson in order.

(To be continued.)

HONOURS PAGE.

AWARDS.

1. Catherine Boyce (13), Newton-on-Ayr Academy.
2. Gladys M. Derrick (15), Skinners Company Girls' School, Stamford Hill, N.
3. C. A. Nash (13), Boys' School, Frome, Somerset.
4. Percy Brain (11), Cathedral School, Great Charles Street, Birmingham.
5. R. Malcolm, The Academy, Broughty-Ferry.
6. Leonard White (14), Boys' School, Frome, Somerset.
7. Harold Key (13), Cathedral School, Great Charles Street, Birmingham.

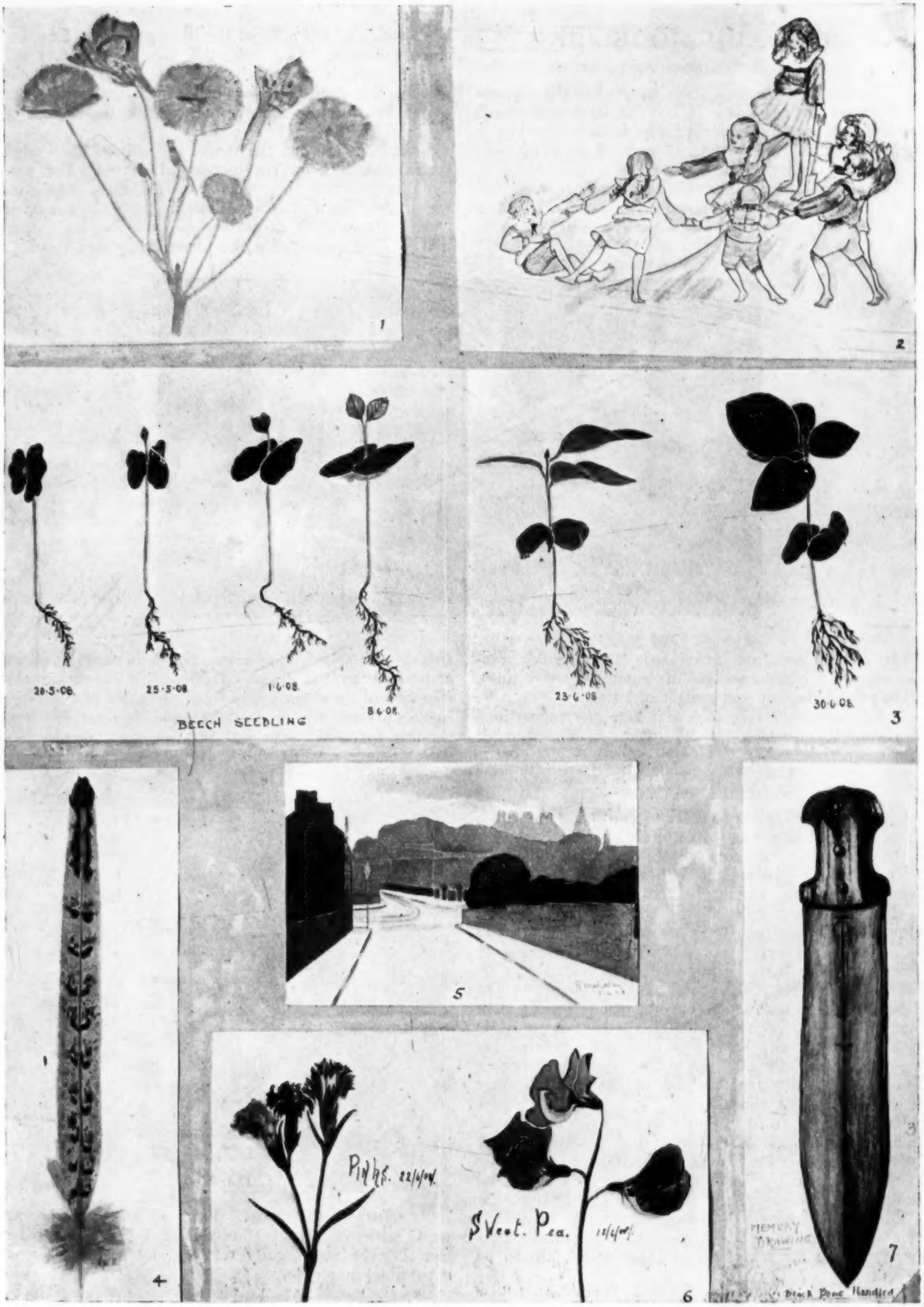
The drawings this month show a pleasing variety, but of the total work sent in there is still too large a proportion of drawing from nature. We have, of course, no desire to discourage this valuable section of art work, but some good sound studies of everyday objects—the common utensils of the kitchen, the tools of the workshop, farm implements, doorways, steps, and other simple bits of architecture—would be very acceptable.

Competitors should remember, too, that light and delicate pencil drawings do not reproduce satisfactorily, and often have to be set aside on this account. Quite a number of such drawings have been received recently.

Though some good examples have been sent in, and the work is encouraging, we feel sure something better yet can be done, especially in the selection of material for study, and by the junior scholars of the school. Infants and young scholars stand just as much chance of getting on this page as older pupils.

Nature Study and Brush-drawing. By W. Francis Rankine. (Cassell and Co.)

Without doubt the brush lends itself admirably to the simple reproduction of natural forms. This manual is an attempt to suggest how the work can be carried out systematically. Its twenty-four full-page plates give abundant suggestions. All the illustrations are opaque, white on black; it would have been an advantage in many cases if white grounds and transparent colour had been employed.



Honours Page.

CARDBOARD MODELLING.

BY FELIX T. KINGSTON, BARRY.

THIS month we begin a stage adapted to the requirements of Standard III. The drawings which form the bases of the models are such as are current in the syllabus of that standard, or such as come well within the capacity of the children.

The material used will be thin cardboard, as suggested at the close of the previous course, the last four models of which form an easy transition from that stage to this.

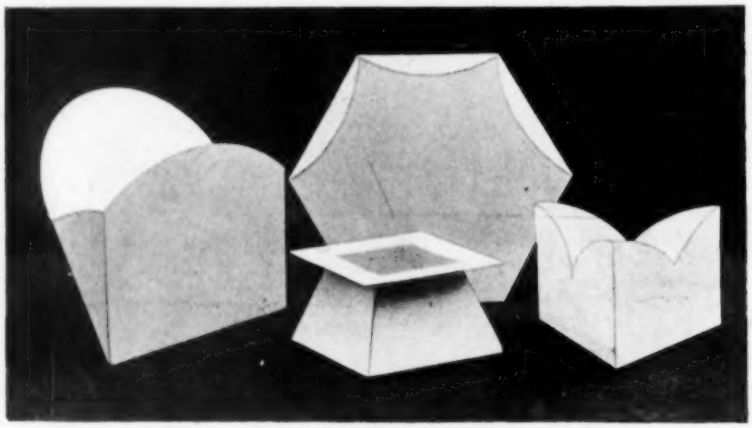


FIG. 1.

Circles and arcs are introduced, (1) to afford practice in using compasses and in cutting curved lines, (2) to provide beauty and variety of form.

It will be unnecessary to repeat here any suggestions on manipulation which may be found scattered through previous articles.

MODEL I.—A MAT.

Give some preliminary practice in drawing circles on waste paper, such as the leaves of old exercise books.

Draw a line of indefinite length, and mark off AB = 5″ (see Fig. 2), bisecting it with the ruler at C. Remember that lines cannot be too thin nor points too fine. The nearer they approximate to their geometrical definition the better. With centres A, B make the arcs, allowing them to project beyond the circle as shown, in order that the points of intersection may be clearly discernible. This method of subdividing the circumference is much more expeditious and exact than that of stepping off the radius from, say, A to D, D to E, etc.; for any error will be equally divided between the two halves of the circle, while the working involves the placing of the leg of the compass only *twice* instead of six times.

Before joining to form the hexagon, mark each point of intersection with a small dot, for this will greatly facilitate the accurate placing of the ruler. Inattention to minutiæ robs the work of much of its educational value. Here, as elsewhere, trifles make perfection.

The lines forming the hexagon need not be dotted by the children as in the figure: they are shown thus merely to distinguish them as those which are to be scored.

It will be most convenient to score these dotted lines before cutting out the circle. Take care that the scoring is thorough at the ends of the lines where the flaps become narrower. As a rule, the narrower the flap the deeper must the scoring be. If this detail be not observed, the flap will not bend over uniformly, the scored line forming a curve and making the surface of the card hollow.

Before cutting out the model the children will need special teaching on the cutting of curves. For preliminary practice they may use the waste paper on which they have just been drawing with the compass. Open the scissors as widely as possible, and while making long cuts, rotate the paper firmly and steadily, so that the scissors are prevented from moving off at a tangent to the curve. During this operation the elbows will move naturally from the sides of the body in an outward direction as the paper is rotated. Run the finger over the edge just cut, to detect any angularities. Guard against short, straight cuts, which produce a line like *mm* (Fig. 2).

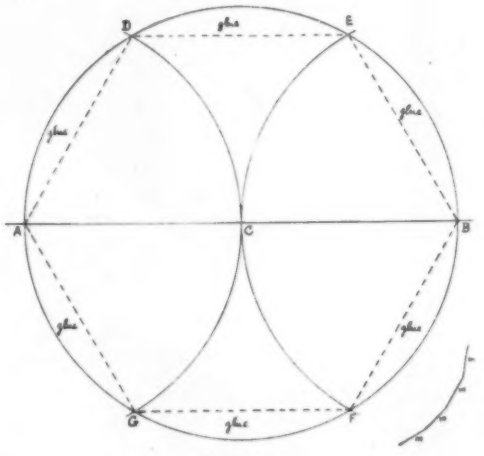


FIG. 2.

To return to the model. First cut away roughly all waste to within about $\frac{1}{4}$″ of the circle; the remainder can then be more easily removed by a dozen (fewer if possible) long cuts.

Lay the model flat on a piece of waste paper with the drawing *downwards*, and glue the flaps as indicated

(Fig. 2). As in scoring, most attention will be needed at the ends of the flaps. By the time the last one is glued the first will be ready for fastening.

Model 2.—A Vase.

This model supplies further practice in drawing circles.

Draw the equilateral triangle ABC (Fig. 3), 3″ side. (This may be done with the compass, if preferred.) On each side make a rectangle 3″ × 2″. With centres A, B, C, and radius 2″, add the circles.

Though only short arcs are required, it will make the drawing much more interesting if the whole of each circle is drawn. Moreover, the symmetry of the figure will make errors more apparent, and serve as a corrective of careless workmanship. Such extra lines will not disfigure the model if they are finely drawn.

Add flaps ¼″ wide where shown (Fig. 3), and score the dotted lines.

As in the previous case, first cut out the drawing roughly to within a small distance of the lines bounding the model. Corners are best managed by cutting inwards—for example, from E to X, and then from D to X, not from X to D.

When fastening together, fix the flaps *inside* the model.

The waste parts of the figure are shaded (Fig. 3), but there is no need for children to spend time in elaborate shading. Rough marking with the pencil of

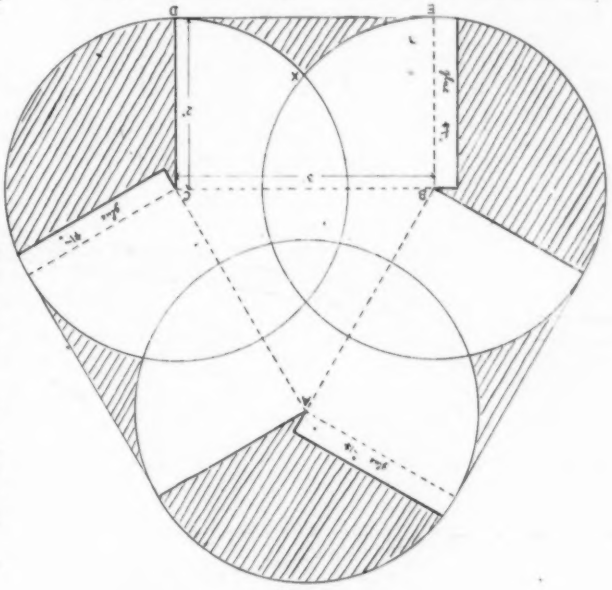


Fig. 3.

parts not required will be sufficient to prevent mistakes in cutting.

Model 3.—A Pocket.

Draw the rectangle ABCD (Fig. 4), 5″ × 4″, and divide it into four equal parts by lines EF, XY. At E, F draw angles of 30°, making EG, FH of indefinite length. The points Q, X, E, F give centres of arcs, which will severely test the accuracy of the rectangle.

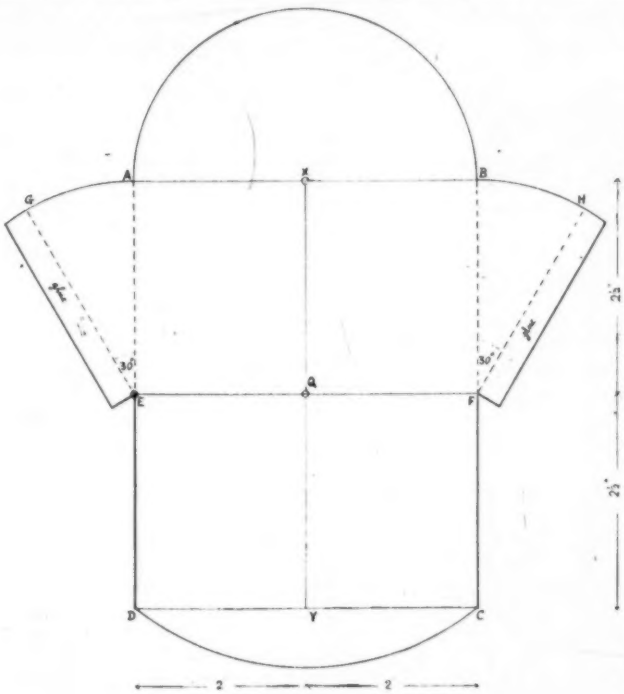


Fig. 4.

Add flaps ¼″ wide at EG, FH. Score, etc., as in previous model.

Model 4.—A Vase.

A simple symmetrical arrangement based on a square of 6½″ side (Fig. 5). The drawing presents no new difficulty, but it will absorb more time than any of the preceding, while the model is rather awkward to fix.

The four lines XY must be scored on the *back* of the paper. Do not omit to cut along the four short thick lines marked *a*. In fixing, begin with the triangular flaps, parts of which may be cut away if desired. Then glue exactly ½″ at each end of the two pieces marked R, and fasten underneath the ends of the two pieces marked S (Fig. 5), forming a horizontal rim as seen in Fig. 1.

In the case of slow pupils, where the demand on patience which this exercise makes is too great, the horizontal rim may be omitted. Under similar circumstances treat any other model in a similar way, and adapt it as far as possible to the individual capacity of each child. An exercise which stimulates the forward pupils may only disbearten the dull ones. In the arithmetic or grammar lesson, for instance, a problem to be worked, or sentence to be analysed, cannot be modified in difficulty for the sake of backward children: what one does, all are expected to do—the class is treated as a whole. But in manual work it is possible—nay, imperative—to treat the pupils individually, and not merely as members of a class. Cardboard work lends itself easily to adaptation, and full advantage should be taken of the fact to make each model easier or more difficult, according to

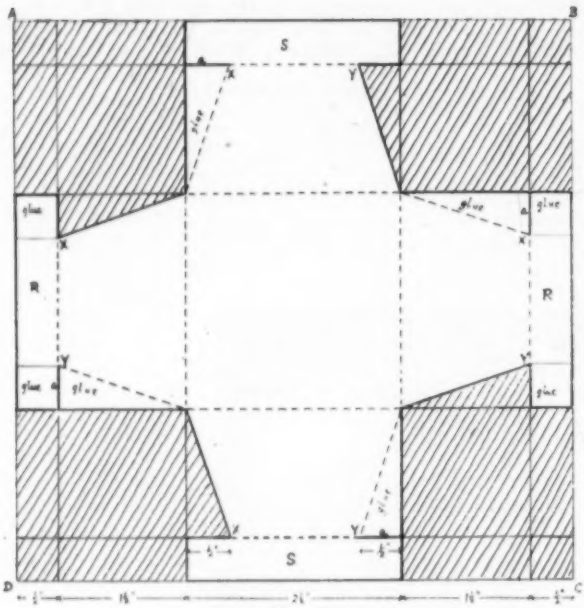


FIG. 5.

the capacity of the child; for however well mapped out a course of models may be, it can be suitable without modification only for the child of *average* capacity.

CRYSTALS FROM THE CONGRESS PAPERS.

ARTISTIC education covers the whole field of the life of the child. It follows him to his home, and notes the influences by which he is there surrounded. It takes note of his physical growth and development, his food, his dress, and his games.....It is impossible to overestimate the influence upon life and character of a child's early surroundings. One writer has said: "The great want of the English middle class is the love for and appreciation of what is beautiful, and this is not to be wondered at if they are educated from childhood in ugly buildings."....A school should be built some distance away from the village. It should lie amongst fields. It should be of commanding appearance, well-built, and chastely decorated. There should be the school bath provided as well as the school dining-room. There should even be the school dress and the school footgear. The interior of the building should be in keeping with its outside appearance. The spacious classrooms should be tastefully decorated. The teachers should be of the best and the classes of the smallest, whilst as its crowning glory there should be a real drawing-room, where art should be enthroned, homage paid, and worship rendered by the little children through picture-books, wall decorations, drawings, and such exercises with the pencil and the brush by the children themselves as would occur to the lady artist in charge of such a room.....

After all, where children are concerned, it is the men and the women who count, not mere cut-and-dried schemes, however clever they may be. Then, if to each suitable area there could have been attached a small band of highly-trained experts charged with the duty of co-operating with the teachers by friendly counsel and help, and not of attempting to dragoon them into methods, and of examining children for results, the very finest possible results would have been achieved.

There are teachers who have resolutely thrown to the winds the traditional methods of teaching drawing in elementary schools. They are making their schools as attractive as possible by simple yet effective interior wall decorations. They go to nature for their inspiration, and by that means they are cultivating the faculties of accurate observation and good taste amongst the children, and, as a valuable help, they are receiving the support and encouragement of skilled experts working under the various educational authorities. It is in this direction only that true success will be achieved. The personality of the teacher, and his rightly directed enthusiasm, must have free play, or we shall never advance very far towards the artistic instruction of the children of the industrial classes.....

The true artistic work of any school cannot be scheduled in a scheme imposed on the school by an outsider. No inspector can come into a school and from his supposed superior knowledge assess the value of the work done in set terms. The quality of the work done will vary according to the conditions under which it is done, the character of each child, and the personality of the teacher. By the time the inspector had in any way mastered these three factors he would, if he were a sensible man, have probably decided that there was a much more profitable line of action which he might take than that of mere critic and faultfinder. For example, I cannot think of any influence more deadening or more destructive of true artistic work in a school than that an inspector for a certain district should address the teachers in his district in the following terms:—

"Ellipses and curves should be drawn only as parts of objects, not practised by themselves.

"Lines not seen should not be drawn; nothing should be put in which requires to be rubbed out afterwards.

"The child should draw what he sees; what he first draws should not be altered. Alterations should not be suggested by the teacher. If the drawing is altered at the teacher's suggestion, the drawing is not the child's, but the teacher's.

"The main object of drawing is to cultivate the observation. If a child can tell orally the proportions of an object, the reproduction of his ideas is of very secondary importance. The drawing must not be done piece by piece in the class. This is imitation, not drawing."

I cannot imagine where the gentleman in question could have gathered together such a complete set of copybook headings. He ought to take a long rest, and try and recover. This is the sort of thing from which primary school teachers in many districts suffer severely. Imagine an artist teacher taking his place in front of a class of young children with a list of directions similar to the above in his hands. He would be completely paralysed in his work for good amongst the children.....

Artistic education in the primary school will mean to the worker more skill and improved taste in his daily work, whatever that work may be. It will prepare a small proportion of the children for advanced work in the evening courses in connection with schools of art. It will give the youth and the adult means for a more rational enjoyment of leisure, and it will enable them to take a wider and nobler outlook upon life as a whole.—*Drawing in Elementary Schools* (*T. P. Sykes*).

GEOGRAPHY NOTES UP-TO-DATE.

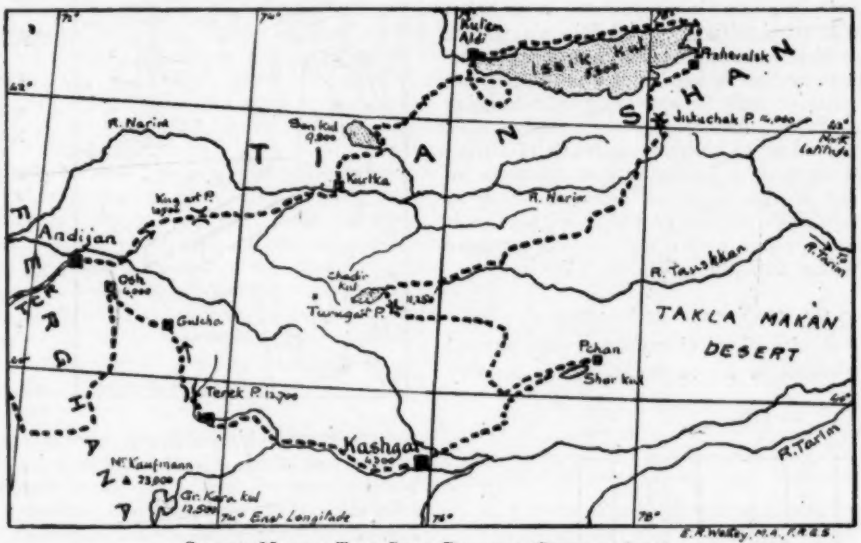
BY E. R. WETHEY, M.A., F.R.G.S.

Environment and Character.

ONE of the earliest geography lessons in school, and one that appeals with the greatest interest to boys (and girls), is, or ought to be, that which concerns itself with a people's "character" as determined by its environment. Bearing in mind that there are many exceptions, it is fairly safe to deduce activity and strength from the temperate and (comparative) inertness and weakness from the tropical regions, insularity from the physical surroundings of the British Isles, homogeneity from those of China. An excellent example of this has recently been brought prominently to the notice of American schools by the *Journal of Geography* (New York). In its May number it printed *in extenso* a long extract from Ellsworth Huntington's *Pulse of Asia* (published in London 1907, and well worth careful perusal by all teachers of geography and history), illustrating the influence of the high plateaus of the Tian Shans on the social conditions and mental attributes of the Kirgiz races found there. The district, which was visited by Huntington in 1903, and which is indicated on the accompanying sketch map, lies at an average elevation of 10,000 to 12,000 feet above sea-level between Andijan on the west, Issik Kul on the north, and Kashgar on the south. Summarising the chief points of his fifth chapter, with which this article is concerned, we should emphasise, as consequences following on physical causes —(1) nomadism; (2) bodily conditions, such as keenness of eyesight, powers of endurance, and apparent laziness when brought into contact with civilisation; (3) social conditions, with respect to houses and furniture, food, sports, hospitality; (4) mental and moral conditions, as illustrated from the position of women amongst the Kirgiz.

1. *Nomadism.*—There is no question at all about this as a result of environment. During the short summer the habitable uplands of the Tian Shans are covered with rich grass capable of fattening any number of sheep and cattle. The best pastures are found close below the ever-shifting snow-line. This predicates ever-shifting humanity, and, as the women and children could not with safety be left behind, ever-shifting households as well—that is, nomadism.

2. *Bodily Conditions.*—Keenness of eyesight is a *sine qua non* to men who live by their wits in the open air, whether they are dwellers on Turanian steppe or South African veld. Huntington tells of Kirgiz who could with the naked eyes distinguish yaks afar off which only strong field-glasses could differentiate from ordinary cattle to his civilised vision. That such men should be able to endure hunger, thirst, and fatigue goes without saying. Bodily trials of that nature are everyday occurrences, and the law of the survival of the fittest clinches the argument. But this very condition of affairs engenders in the Kirgiz a great capacity for taking rest, which militates against the national character when any approach to steady work is required; and the coming of the Russians has brought many of the tribes into touch with civilisation and all that it involves. Peace and safety, easy markets, accessible luxuries, a tendency to abandon the pastoral life for that of the day labourer, seem to bring into prominence a lazy trait which, however justifiable in the days when the erstwhile nomad was compelled to rest between his frequent rounds of great exertion, meets with stern disapprobation in the eyes of the Russian employer.



SKETCH MAP OF TIAN SHAN DISTRICT (CENTRAL ASIA).

Visited by Ellsworth Huntington in 1903. Based on his map in the *Pulse of Asia* (Constable, 1907).

— — — Huntington's route.
Figures = Heights in feet above sea-level. Kul = lake.
T.C.R. = Trans-Caspian Railway.
Scale, English miles. 0 50 100

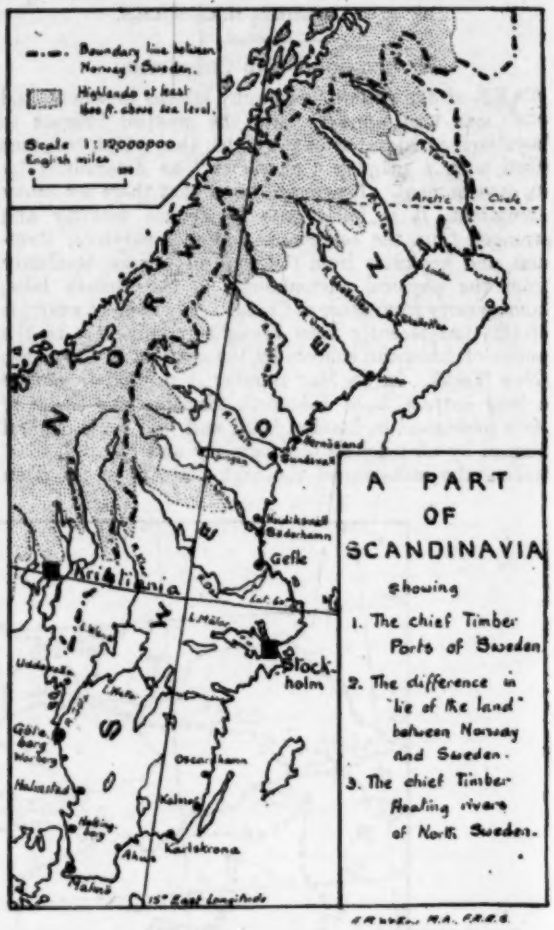
3. *Social Conditions.*—In a nomadic state of society dwellings must of necessity be such as to admit of easy building, and easy removal and transport from place to place. The Kirgiz use willow sticks and woollen cloth as being the most accessible materials for making their *kibitkas*, or tents. The whole affair can be readily taken to pieces and arranged in convenient bundles for

either ox or camel transport. For furniture, leather and wood are the raw material—again the most available commodities. Food, as is natural, is almost entirely animal, and is eaten after a fashion which, though again the result of environment, appears somewhat disgusting to Western eyes. The curious on such matters had better be referred to Huntington's book: it was like the feeding of wild animals in a menagerie. Sports are the reverse of the modern hotchpotch of events, whether we call it a "gymkhana" or "the Olympic games," and centre round one notion, and one only—horses and racing, or scrimmaging on horseback. Finally, hospitality is, as is usual amongst most nomads, on a generous scale. Where people are always travelling, and where, of course, inns and caravanserais do not exist, the host of one day is the guest of the next, and entertainment is as freely given as it is naturally expected. Huntington found fresh horses without the asking whenever he wanted them, nor was payment for them so much as hinted at.

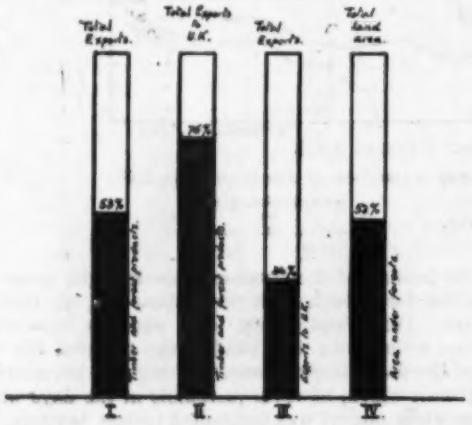
4. *Mental and Moral Conditions*, as exemplified in the treatment of women, are again an obvious result of environment. The average Mohammedan—and the Kirgiz are Mohammedans—keeps his women in seclusion, veils them if they ever do appear in public, and keeps them generally either as stupid drudges or as light playthings. But it is obvious that when migrations have to be undertaken the women cannot be kept in seclusion, nor can they fold up tents or milk sheep with cloths hanging down over their faces. Accordingly the Kirgiz women are never veiled. And as the responsibility of taking down and packing up the *kibitka* always devolves on the women, they are certainly not regarded either as drudges or as playthings. On the contrary they take their proper place in the social round, and are the stronger and more self-reliant and more affectionate for it.

Floatage of Timber in Sweden.

The importance of a plentiful supply of easy natural waterways is obvious in all countries. To a country like Sweden, whose forests and their products are a principal asset of commercial prosperity (*see* diagrams annexed), it is overwhelming. There is absolutely no forest area in Sweden, says Professor Gunnar Andersson


Boundary line between Norway & Sweden.
Highlands at least 1000 ft. above sea level.
Scale 1:12000000
English miles
Arctic Circle
A PART OF SCANDINAVIA
showing
1. The chief Timber Ports of Sweden
2. The difference in "lie of the land" between Norway and Sweden.
3. The chief Timber floating rivers of North Sweden.
Stockholm
Gefle
Karlskrona
Malmö
15° East Longitude

(an expert quoted in the August number of the *Geographical Journal*) which cannot be exploited owing to lack of water transport. As a matter of fact nearly 16,000 miles of waterway are available. Sweden, it should be remembered, except for its north-western portion along the Norwegian frontier, is not a mountainous country, and the rivers have passed their chief *cataract* stage before they reach the secondary plateau on which the forests stand. This plateau sweeps down to the sea at an average elevation of from 1,500 to 600 feet, and is furrowed by streams, most of which are peculiarly well adapted for timber floating. In the chief forest area, that lying to the north, say, of Stockholm, from the Tornea to the Dal, there are no less than sixty-one river mouths along the coast. Of these as many as eleven belong to the class of what we should call long rivers in the British Isles—that is, having a length of at least 180 miles. As each river reaches the coast directly, and does not unite with others to form estuaries, the whole sixty-one are more or less utilised in the timber-floating industry. It is therefore round and about these river mouths that the numerous little timber ports of the Gulf of Bothnia have risen (*see* accompanying sketch map). Two instances here will suffice to show how "timber is king" in these districts. Gefle exports every year about £1,500,000 worth of goods,



Diagrams to show Importance of Timber Industry in Sweden.

"Forest products" include manufactures—for example, matches, wood pulp, paper.
With diagram IV. might be contrasted—
Land under cultivation = 9 %.
Land under meadows = 4 %.

of which £1,100,000 worth is "timber and products." In the little town of Sundsvaal, according to a recent Consular report, out of fifty-seven works thirty-nine were sawmills, three wood-pulpers, and one joinery. In the Custom House district of this same Sundsvaal are fifty-five sub-ports, each shipping wood as its main export.

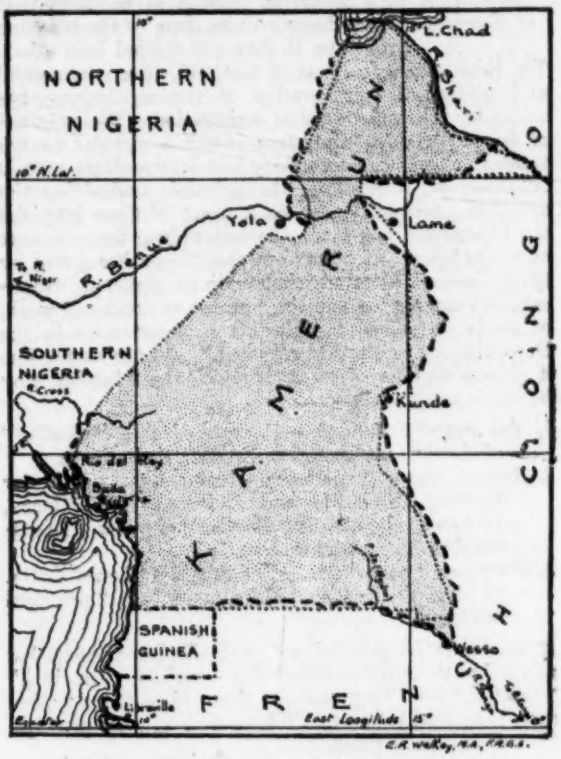
Sweden is fortunate, too, in the "fall" of its timber rivers. This varies from 11 feet per mile in the Ljungan to 5 feet in the Tornea. The currents in consequence are just sufficient to give free floatage—that is, each trunk by itself—and not swift enough to interfere with the transport of the timber. Contrast this condition with the slowness of the rivers flowing north over the Eastern European plain—for example, the Dwina, which has from eight to ten times less fall, and where in consequence much more labour is required in getting the timber down to the coast.*

The flooding of the rivers is an important event to all lumberers. In Sweden there are two floods. In addition to the ordinary "spring" flood, there is what is known as the "mountain" flood. This is the result of the thaw in the mountain region about June, a month later than the spring flood. Without it much of the timber would run great risks of being stranded, and delay is dangerous when one remembers that harbours on the Gulf of Bothnia are sometimes frozen up for six months out of the year. The lakes, the number of which is legion, are both a blessing and the reverse: while they serve as regulators of the volume of water and act as "timber reservoirs," they also necessitate extra expense in the towing of the logs to their outlets.

But the "floatage" question in Sweden is not without its special difficulties; and one of them is right ahead at the present time. The users of water-power—and they are fast becoming a very important body in Sweden now—obviously do not see eye to eye with the timber men on the question of rivers and their floatage capacities. Conflicting interests here provide a difficulty which the Government of Sweden will have to overcome, or try to, in the near future.

A Correction in the Map of Africa.

To keep his atlas up-to-date is one of the first duties of the geography teacher. One of the latest alterations in the ever-changing political map of Africa is necessitated by the new Franco-German agreement with respect to the boundary line between German Kamerun and French Congo. The school atlases in use show the artificial frontier—if they show any at all—of 1904. The new line is determined largely by the courses of rivers or by straight lines joining specified points, such as fords on the rivers. Both Powers have mutually conceded portions of territory, as is shown by a glance at the annexed map of the old and new frontiers. French Congo is now beginning to assume huge proportions. It is three and a half times as large as France, and two years ago had to be divided for purposes of administration into three colonies—Gabun, Middle Congo, and Ubangi-Shari-Chad. Both territories are good examples of "colonies of exploitation." The native population of Kamerun is estimated at between 3,000,000 and 4,000,000, and that of French Congo at anything between 8,000,000 and 15,000,000. It is questionable whether there are 2,000 white people all told in the whole of the double area. The majority of the whites are engaged in official or trading positions. The nature of the exports is much the same from both—namely, rubber, palm oil and kernels, cacao, and ivory—that is, of a "jungle" type, though the Germans are making successful "plantation" experiments in various quarters, and the botanic garden



German Kamerun—The New Boundary.

..... The old frontier line.

[- - -] The new "Kamerun."

0 100 200

Scale of English miles.

Some maps make the old frontier line follow long. 15° in the lat. of Kunde, much farther south—that is, to a point on lat. 4°.

at Victoria is not without more than local fame. Cloves, vanilla, ginger, and pepper show good promise; cacao, coffee, and rubber are already successful. It is in the German colony, too, that the only railway (Victoria-Lisoka, 22 miles) at present exists, though the French have a project in the air of connecting Libreville with the Congo. The capital of Kamerun is Buëa

PRIZE COMPETITION.

(Student's Column.)

The Prize offered for the best Revision Notes of a Play or Novel is divided equally between Matthew Holmes, Christ Church Boys' School, Hull, and Ellen Terry, Northumberland Avenue Junior School, Hull. Among the other papers submitted those by "Fiction" and Miss May Bell are commended.

NOVEL AND EDUCATIONAL.

Note.—The object of Messrs. Nelson's new departure, detailed on pp. 206, 207, is twofold: (1) To provide *ideal supplementary reading* in the school, and (2) to enable children to form a *unique library of their own* in the home.

* By way of comparison, it is well to remember that the river Tyne between Hexham and Ryton has a "fall," gradually dwindling from 7 feet per mile down to 3½. Immediately above the confluence of the North and South Tyne, and along a stretch of some 15 miles, the fall is from 13 to 14 feet per mile.

NOTES FROM THE NORTH.

BY ROBERT DICKSON, M.A., F.E.I.S.

ON one or two occasions I have referred in this column to the regulations of the Scotch Education Department with regard to the registration of teachers, and have called attention to the very prevalent opinion in Scotland that serious harm will be done to the teaching profession if they are carried into effect. The Educational Institute of Scotland, after very careful and protracted consideration of the regulations, has called for the withdrawal of registration. Recently one of its important Committees issued a circular to the teachers engaged in secondary and intermediate schools to ascertain, if possible, the principle underlying the so-called "recognition." As a result of these inquiries the Committee has made the following pronouncement on the subject. It points out that "whether tested by type of school, attested scholarship of applicant, experience in teaching the subject, number of hours per week, or grade of pupils, inexplicable inconsistencies in the Department's replies are revealed." At the same time it gives a number of cases, of which the following may be taken as typical:—

Registration of Teachers.

1. Ten years' experience.—Recognised as a "teacher" of classics, mathematics, English, and science.
2. Sixteen years' experience.—Has taught pupils for Leaving Certificate and University Preliminary, 15 hours' classics, 12½ English per week. Recognised as "assistant teacher."
3. Four years' experience.—Has taught 14 hours' Latin, 13 hours' English. Recognised as "principal teacher."

It may here be pointed out that the Department has recognised three grades of teachers—namely, "principal," "teacher," and "assistant." From these three typical cases here cited it is impossible to find on what principle the recognition is granted.

BUT the Institute's Committee gives other cases, perhaps more inexplicable—if that is possible—than those referred to above. One teacher has first-class honours in modern languages, and teaches all the French in the school up to and including the Leaving Certificate Examination standard, and has been recognised as "assistant." Another teacher who was recognised as "assistant" reapplied, stating he had been responsible for modern languages during the session 1903-1904 in an intermediate school, and he has now received recognition as a "principal teacher." In one school a teacher, who has been engaged teaching Latin for twenty hours a week, in both lower and higher stages, has been recognised as an "assistant." In fact, in that school there has not been one teacher recognised as "principal" in English, Latin, or mathematics, but a teacher has been recognised as "principal" in English who is said never to have taught in that school at all. Such glaring anomalies as these I have culled from the report of the Committee conclusively prove, even to the most unbiassed mind, that the Department has made one of the most fatal mistakes of administration ever made by a public Department, and one likely to have far-reaching consequences on the teaching profession. Generally the staffs of large intermediate schools, the report continues, have been relatively degraded, and headmasters have had their status recognised. As I pointed out, in discussing the question immediately after the publication of the regulations, the result will be to divide the profession into separate compartments, this notwithstanding the fact that the great majority of the teachers of Scotland have had exactly the same professional training; it will take away from young teachers all incentive and stimulus to make themselves more proficient in their profession; it will cause immense harm and dissatisfaction to the teachers in primary schools, who, after all, must lay the foundation of all work. The consequence of this may very soon be felt in the teaching profession.

Other Instances.

SOME teachers in primary schools who considered themselves qualified to teach, or had previously taught, higher subjects state they did not apply because they did not think the regulations permitted them to do so. Those who did apply received various answers Some of these replies I may be allowed to quote: "Under which article of the regulations do you put your claims?" "If you wish to qualify, you must seek guidance from the Director of Studies of one of the Provincial Committees." "Full particulars of the subjects you have taught have been recorded in the Department, and will be available for reference." "You have been noted as an 'assistant teacher' of these subjects in a secondary school." All which go to prove my contention that a great injustice is being done to many of the teachers in primary schools, a number of whom are university graduates, and have for years taught pupils and pupil-teachers for the Leaving Certificate and University Preliminary Examinations with conspicuous and acknowledged success. To these men and women the Department in justice owes something, and it would be well before it is too late for it to recognise the fact. The best, I had almost said the only, way is to withdraw the replies granting the so-called "recognition," and acknowledge it has made a mistake. Correspondents all over Scotland state that "the whole thing is meaningless," "un-understandable," "a farce." These may appear strong expressions, but they characterise in brief the general feeling of teachers throughout Scotland with regard to the latest mistake of the Department. The Department has not in the past been indifferent to the opinion of Scottish teachers, and it would be a thousand pities if, at the beginning of a new system of training, it carried out these regulations in the spirit in which they have evidently been conceived. The Department cannot now shield itself behind the "mystery" of the Privy Council, as that has been during recent years solved. Let it, therefore, resile from its present position, and the desire of a closely articulated system—however laudable such a desire is in many ways—will not bring in its train such baneful results. Conservatism in educational administration is undoubtedly a bad thing, but ultra-radicalism is in many respects worse.

Teachers in Primary Schools.

BY a recent ordinance great changes have been made with regard to the universities. These changes will have some influence on the future of the teaching profession. The recent regulations with regard to the training of teachers have rendered closer the relationship between the teaching profession and the univer-

The Scottish Universities.

sities. The Higher Education Committee of the Institute has had under consideration the University Preliminary Examination in Arts and Science. It assumes that the function of this examination is to test whether candidates have received such a general education as will enable them to enter with profit upon a specialised course of university study, and that neither tradition nor the needs of any one profession should determine the subjects included or the standard exacted. It does not in its report discuss the debatable question of the relative values of humanistic and realistic studies, but is of opinion that both are essential in any course of instruction aiming at general culture. Its findings, therefore, on the subject are somewhat important. It considers that candidates should be compelled to pass in five subjects—English on the higher standard, mathematics on the intermediate standard of present Preliminary, Latin on the standard of Intermediate Certificate, science on the standard of Intermediate Certificate, and *one* of the following—a language (other than English or Latin), history, geography, all on higher standard. It holds that the Leaving Certificate of the Scotch Education Department should be accepted as equivalent to the Preliminary Examination; that the Joint Board should have power, as at present, to accept other examinations as exempting from the Preliminary Examination either wholly or in part, and that attendance on a class in any language should not qualify for graduation unless the student has previously passed an examination in that language in the higher standard.

THE annual meeting of the Institute is this year to be held in the Synod Hall, Edinburgh, as the University is not available. The past year has been one of anxiety to the officials of the Institute in view of the introduction of the Scottish Education Bill, and to some extent the President's address will doubtless be coloured by that fact. But there is every hope that by the end of October that measure will have been placed on the Statute Book of the country, and in that case the winter session will be more occupied with what may be called domestic legislation. There are one or two very important problems awaiting solution. The rural teachers of Scotland are beginning to move, and to insist on more being done on their behalf. The question of better salaries will no doubt receive some attention in view of the passing of the Act, especially that part which deals with superannuation. As the pension is to bear some relation to the final salary, it is felt that something will have to be done to put the salaries paid in rural districts on a more satisfactory basis. The question of large classes, too, is likely to receive some attention. It has been postponed for some years on account of the great difficulty experienced by many School Boards in securing applicants for vacancies. But signs are not wanting that the profession is obtaining more entrants, and as a result it is asserted by some of H.M. Inspectors that the dearth is passing away. If this is the case, one of the first reforms that must take place is the abolition of large classes, especially in the infant and junior divisions of the primary schools. For some time attention has been devoted in this respect to the higher divisions of the primary and intermediate schools, but it is felt that there is as great need for small classes at the beginning as at the end of a child's education. In all probability, therefore, these and other reforms will be attended to during the coming winter session.

The Annual Meeting of the Institute.

WITH regard to the former of these questions considerable information has already been collected. From a careful study of the facts gleaned the Rural Teachers' Committee has come to the conclusion that on the whole the salaries are inadequate, especially in the North. There is no system of fixing or regulating salaries. Where increases have been granted, they are very irregular as to amount and time. There seems to be little desire on the part of School Boards to grant increases of salary on the strength of good work and long service. It is found that fully 86 per cent. of rural head teachers in the North have salaries under £150, in the central district fully 71 per cent., and in the southern district 46 per cent. In all probability a deputation will be appointed by the Institute to visit rural districts, especially the Highlands, in the interests of rural teachers and education. The resolutions the Committee came to were that the minimum salary of rural headmasters should be £120, with free house, and that there should be a regular scale of increment. The General Council of the Institute resolved to delay consideration of the resolutions till a later date. They are likely to come up in the coming winter.

Rural Teachers.

REPORT ON THE TEACHING OF ENGLISH IN THE U.S.A.—Miss M. A. Williams, who is lecturer in English at Southlands Training College, and who was recently awarded a Gilchrist Travelling Studentship by the University of London, has published, through Messrs. Swan Sonnenschein and Co., a short account of her observations made during a residence of some three months in the States. The writer is a shrewd observer, with no small sense of humour, and therefore of relative values, and she might have given useful hints even to American teachers; in fact, we think her book will be quite as suggestive to them as it will undoubtedly prove to English teachers of the mother tongue. We wish, however, that all teachers on this side shared the conviction which Miss Williams assures us possesses the minds of our American colleagues, "that literature forms part of the moral training the school affords, and that, through good literature, the children may get clear ideas of right and wrong; that in books the noblest thoughts of great-hearted men and women lie open to the children; that they quicken the ethical sense, purify the emotions, strengthen the will to do well, and awaken the child to beauty, in spirit, as well as form and thought." This is well expressed. As an inspiration and an ideal we commend it to the followers of the New English Movement.

NOTICE.

TEACHERS interested in the best methods of preparing pupils for appreciation of the best literature are invited to apply for a pamphlet entitled

THE LADDER TO LITERATURE.

THOMAS NELSON AND SONS,
35 Paternoster Row, London, E.C.

Our Query Column.

SOLUTIONS BY A. CLEMENT JONES, M.A., PH.D., SENIOR MATHEMATICAL MASTER, BRADFORD GRAMMAR SCHOOL.

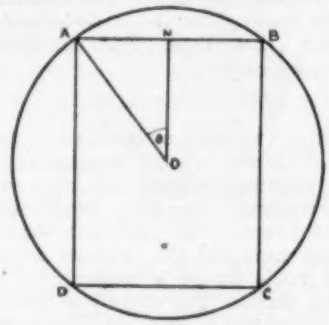
RULES.

1. Each correspondent is restricted to *one* question.
2. Each query must be accompanied by the name and address of the correspondent, and the *coupon* which appears on the back wrapper of the current number of the Journal.
3. CORRESPONDENTS MUST IN ALL CASES STATE THE SOURCE FROM WHICH THEIR QUERY HAS BEEN OBTAINED.

The Editor reserves to himself the right to decline to answer any question which is, in his judgment, unsuited to the Magazine.

Cestrian.—Find the radius of the base of the cylinder of maximum volume which can be cut out of a sphere of radius R. Find also the radius of the base when the area of the curved surface of the cylinder is a maximum.

The cylinder must be symmetrically placed with respect to the sphere, for the ends of the cylinder are perpendicular to the generating lines on the curved surface, and consequently in an unsymmetrical position the length of the cylinder would have to be that of the shortest generating line. If O is the centre of the sphere, suppose ABCD is a central section through the axis of the cylinder, then if ON is the axis, we have—



Radius of base of cylinder = R sin θ.
Height of cylinder = 2R cos θ.
Hence, volume of cylinder = $2\pi R^3 \sin^2\theta \cos\theta$.
Therefore $\sin^2\theta \cos\theta$ is a maximum.

If $\cos\theta = x$, this gives $x - x^3$, a maximum; the two first differentials of this function of x are $1 - 3x^2$, $-6x$, hence for a maximum or minimum $1 - 3x^2 = 0$,

or, $$x = \pm\frac{1}{\sqrt{3}}.$$

The value $x = \frac{1}{\sqrt{3}}$ makes the second differential negative, and therefore corresponds to a maximum.

Hence, $\sin\theta = \sqrt{1 - \cos^2\theta} = \sqrt{\frac{2}{3}}$,
and the radius of the base of the cylinder is $R\sqrt{\frac{2}{3}}$, or $\frac{1}{3}R\sqrt{6}$.

The area of the curved surface of the cylinder is
$4\pi R^2 \sin\theta \cos\theta$, or $2\pi R^2 \sin 2\theta$.
Hence $\sin 2\theta$ is a maximum.
Therefore $\sin 2\theta = 1$,
that is, $\theta = 45°$.
The radius of the base of the cylinder is therefore
$$\frac{R}{\sqrt{2}} \text{ or } \frac{1}{2}R\sqrt{2}.$$

R. C. H.—Prove that, with certain limitations on the values of the constants involved,

$$\int_\beta^x \frac{dx}{\sqrt{(\alpha - x)(x - \beta)}} = 2 \arccos\sqrt{\frac{\alpha - x}{\alpha - \beta}}$$

and integrate $\int_\alpha^\beta \sqrt{(x - \alpha)(\beta - x)}$.

The expression arc cos x is the same as $\cos^{-1} x$, meaning the angle whose cosine is x.

Let $$\sqrt{\frac{\alpha - x}{\alpha - \beta}} = \cos\frac{\theta}{2};$$

that is, $$\alpha - x = (\alpha - \beta) \cdot \cos^2\frac{\theta}{2}.$$

Hence $$dx = (\alpha - \beta)\cos\frac{\theta}{2}\sin\frac{\theta}{2} \cdot d\theta.$$

Now if x has the value assigned to it in the upper limit, $\sqrt{\frac{\alpha - x}{\alpha - \beta}}$ must be positive and less than unity. Therefore either $\alpha > x > \beta$ or $\alpha < x < \beta$—that is, x lies between α and β.

When x is equal to β, $\cos\frac{\theta}{2} = 1$ and $\theta = 0$ is one value. Hence

$$\int_\beta^x \frac{dx}{\sqrt{(\alpha - x)(x - \beta)}} = \int_0^\theta \frac{(\alpha - \beta)\cos\frac{\theta}{2} \cdot \sin\frac{\theta}{2} \cdot d\theta}{\sqrt{\left\{(\alpha - \beta) \cdot \cos^2\frac{\theta}{2} \cdot (\alpha - \beta)\sin^2\frac{\theta}{2}\right\}}}$$

$$= \int_0^\theta d\theta = \theta = 2 \arccos\sqrt{\frac{\alpha - x}{\alpha - \beta}}.$$

$$\int_\alpha^\beta \sqrt{(x - \alpha)(\beta - x)}\,dx = \int_\alpha^\beta \sqrt{\left(\frac{\alpha - \beta}{2}\right)^2 - \left(x - \frac{\alpha + \beta}{2}\right)^2}\,dx.$$

Put $$x - \frac{\alpha + \beta}{2} = \frac{\alpha - \beta}{2} \cdot y,$$

hence $$dx = \frac{\alpha - \beta}{2}\,dy.$$

The integral then becomes

$$= \int_1^{-1} \left(\frac{\alpha - \beta}{2}\right)^2 \sqrt{1 - y^2}\,dy = \left(\frac{\alpha - \beta}{2}\right)^2 \int_1^{-1} \sqrt{1 - y^2}\,dy.$$

Since y lies between 1 and -1, put $y = \cos\theta$—that is, $dy = -\sin\theta\,d\theta$. Hence

$$\int_1^{-1} \sqrt{1 - y^2} \cdot dy = \int_{2\pi}^{\pi} -\sin^2\theta\,d\theta$$

$$= \tfrac{1}{2}\int_\pi^{2\pi} (1 - \cos 2\theta)\,d\theta = \tfrac{1}{2}\Big[\theta - \tfrac{1}{2}\sin 2\theta\Big]_\pi^{2\pi} = +\frac{\pi}{2}.$$

Hence the original integral is $\frac{\pi}{8}(\alpha - \beta)^2$.

This second integral could be obtained equally well by making the same substitution as in the first. This substitution is, however, only suggested by the form in which the question is set, and we think the solution given more straightforward and instructive.

Sparx.—Your query is unsuitable for this column.

Constant Reader.—Please send the Editor a list of the books you already have.

Bellamour.—Integrate $\int \sin^{-1}\frac{2x}{1+x^2}\,.\,dx$.

Now $\sin 2\theta = \frac{2\tan\theta}{1+\tan^2\theta}$, put $\theta = \tan^{-1}x$;

that is, $2\tan^{-1}x = \sin^{-1}\frac{2x}{1+x^2}$.

Hence
$$\int \sin^{-1}\frac{2x}{1+x^2}\,.\,dx$$
$$= 2\int \tan^{-1}x\,.\,dx$$
$$= 2\int \tan^{-1}x\,.\,\frac{dx}{dx}\,.\,dx.$$

Integrating by parts
$$= 2x\tan^{-1}x - 2\int x\,.\,\frac{\mathrm{d}\,.\,\tan^{-1}x}{dx}\,.\,dx$$
$$= 2x\tan^{-1}x - 2\int \frac{x}{1+x^2}\,.\,dx$$
$$= 2x\tan^{-1}x - \log(1+x^2).$$

Mathematics.—Solve (a) $xdy - ydx = \sqrt{y^2-x^2}\,dx$.

(b) $(x+6)(y^2-2y)dx - (y+2)(x^2-3x-4)dy = 0$.

(c) $\left(3\frac{dy}{dx} - y\tan x\right)(1+\cos x) = y^4\sin x$.

(a) $xdy - ydx = \sqrt{y^2-x^2}\,.\,dx$.

Put $y = vx$, hence $dy = vdx + xdv$, and the equation becomes
$$xvdx + x^2dv - xvdx = x\sqrt{v^2-1}\,dx.$$

Dividing by x, $xdv = \sqrt{v^2-1}\,dx$,

or, $$\frac{dv}{\sqrt{v^2-1}} = \frac{dx}{x};$$

that is, $\log(v+\sqrt{v^2-1}) = \log x + \log C$,

where C is a constant. Hence
$$y + \sqrt{y^2-x^2} = Cx^2$$
is the complete solution.

(b) $(x+6)(y^2-2y)dx - (y+2)(x^2-3x-4)dy = 0$.

The equation can be written
$$\frac{(x+6)dx}{x^2-3x-4} = \frac{(y+2)dy}{y^2-2y},$$

or, $$\frac{x+6}{(x-4)(x+1)}\,dx = \frac{(y+2)dy}{y(y-2)};$$

that is, $$\left(\frac{2}{x-4} - \frac{1}{x+1}\right)dx = \left(\frac{2}{y-2} - \frac{1}{y}\right)dy.$$

Integrating,

$2\log(x-4) - \log(x+1) = 2\log(y-2) - \log y + \log C$,

where C is a constant.

Hence $y(x-4)^2 = C(x+1)(y-2)^2$.

(c) $\left(3\frac{dy}{dx} - y\tan x\right)(1+\cos x) = y^4\sin x$.

This equation can be written
$$\frac{3}{y^4}\frac{dy}{dx} - \frac{1}{y^3}\tan x = \frac{\sin x}{1+\cos x}.$$

Put $z = -\frac{1}{y^3}$, hence $dz = \frac{3}{y^4}dy$.

Hence $$\frac{dz}{dx} + z\tan x = \tan\frac{x}{2}.$$

Now $e^{\int \tan x\,.\,dx} = e^{-\log\cos x} = \sec x$.

Hence $$\sec x\frac{dz}{dx} + z\,.\,\sec x\tan x = \sec x\tan\frac{x}{2};$$

that is, $$\frac{d}{dx}(z\sec x) = \sec x\tan\frac{x}{2},$$

or, $$z\sec x = \int \sec x\,.\,\tan\frac{x}{2}\,.\,dx.$$

We must now find
$$\int \sec x\,.\,\tan\frac{x}{2}\,.\,dx$$
$$= \int \frac{\tan\frac{x}{2}}{\cos^2\frac{x}{2} - \sin^2\frac{x}{2}}\,.\,dx = \int \frac{\tan\frac{x}{2}\,.\,\sec^2\frac{x}{2}}{1-\tan^2\frac{x}{2}}dx$$
$$= \int \frac{d\,.\left(\tan^2\frac{x}{2}\right)}{1-\tan^2\frac{x}{2}}.$$

Put $u = \tan^2\frac{x}{2}$, then the integral becomes
$$= \int \frac{du}{1-u} = -\log(1-u).$$

Hence $$z\sec x = -\log\left(1-\tan^2\frac{x}{2}\right) + C,$$

or, $$-\frac{1}{y^3}\sec x = -\log\frac{2\cos x}{1+\cos x} + C;$$

that is, $$Cy^3\,.\,\cos x = \cos x\log\frac{2\cos x}{1+\cos x} - 1.$$

Try and get an early edition of Forsyth's *Differential Equations* in one volume. Write and we will tell you what articles to read and examples to solve.

"*De Sousa.*"—Solve
$$x^3 + y^3 + z^3 = a^3. \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (1)$$
$$x^2 + y^2 + z^2 = a^2. \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (2)$$
$$x + y + z = a. \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (3)$$

Now $(x+y+z)^2 = x^2+y^2+z^2+2(xy+yz+zx)$.

Hence $a^2 = a^2 + 2(xy+yz+zx)$;

therefore $$xy + yz + zx = 0 \quad . \quad . \quad . \quad . \quad . \quad (4)$$

Again, $x^3+y^3+z^3-3xyz = (x+y+z)(x^2+y^2+z^2-xy-yz-zx)$.

Substituting from (1), (2), (3), (4)
$$a^3 - 3xyz = a^3.$$

Hence $$xyz = 0. \quad . \quad . \quad . \quad . \quad . \quad . \quad (5)$$

From (5) $x = 0$ *or* $y = 0$ *or* $z = 0$.

Hence (4) two of the variables must be zero, and from (3) the third must be a.

Solutions are
$$x = a,\ y = 0,\ z = 0.$$
$$x = 0,\ y = a,\ z = 0.$$
$$x = 0,\ y = 0,\ z = a.$$

W. *Campbell.*—Show that the difference between the two specific heats for a perfect gas is equal to pv/θ where p is the pressure, v the volume, and θ the absolute temperature.

Consider a unit mass of a perfect gas whose pressure is p, volume v, and absolute temperature θ. Now raise the temperature to $(\theta+1)$, keeping the volume constant. The heat required is C_v—that is, the specific heat at constant volume. This heat is used to raise the temperature of the unit mass of gas only, for no work is done since the volume remains constant, and the work done when a gas expands is measured by $\int pdv$.

Again, let the unit mass of gas (p, v, θ) be raised in temperature to $(\theta+1)$, keeping the pressure constant. The amount of heat required is C_p, the specific heat at constant pressure. This heat is used in two ways.

1. It raises the temperature of unit mass of gas one degree—that is, C_v units of heat.

2. It does work in changing the volume to v_1 (say) against the pressure p. This is measured by $p(v_1 - v)$.

But by the combined laws of Boyle and Charles
$$\frac{pv}{\theta} = \frac{pv_1}{\theta+1}.$$

Hence $(v_1 - v)\theta = v$,

or, $$p(v_1 - v) = \frac{pv}{\theta}\ \text{(units of heat)};$$

that is, the heat required to do the work in (2) is $\frac{pv}{\theta}$.

Hence $$C_p = C_v + \frac{pv}{\theta},$$

or, $$C_p - C_v = \frac{pv}{\theta},$$

all the terms being expressed in the same units.

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French Prize Competition.

1. All French translations **must be received not later than October 6, 1908,** and addressed to:—PRIZE EDITOR, Office of *The Practical Teacher*, 35 and 36 Paternoster Row, London, E.C.
2. Competitors should cut out and send the *coupon* which appears on the Back Wrapper page of the current number. One coupon must be sent for each entry.
3. Competitors should write pseudonym only on MS. Prize-winner will be asked to send name and address for publication.
4. No competitor may take the prize offered more than once in three months.

A Prize of **Half a Guinea** is offered for the best rendering into English of the following extract:—

Ah, vous n'imaginez pas comme il est bon de vous parler ce soir! Toutes les secousses qu'on a éprouvées, tout le mal qu'on s'est fait en se cognant les coudes; toutes les rudesses qui vous ont éraflé, écorché; tous les contacts pénibles, toute la grossièreté traversée, tout cela tombe, semble-t-il, comme des vêtements tachés de boue, et l'on sent en s'approchant de vous, qu'un souffle frais vous passe, que quelque chose de reposant vous environne; il semble que l'on pénètre dans une chapelle, avec cette croyance d'enfant, que la madone vous sourit. Vous ai-je dit que je vous avais nommée "Sainte-Marie-des-Fleurs" avant de vous connaître? Vous plaît-il d'être sous cette invocation, la figure très confiante à qui l'on vient après chaque journée apporter ses confessions et presque ses prières? Il y a tant de choses rudes tout le temps heurtées sur la route, depuis la brutalité franche jusqu'à ce qui n'est que l'absence de délicatesse. On souffre d'un bout à l'autre de cette progression parcourue en tous sens, et presque tous les gens que l'on voit vous font l'effet de ces pierres sur quoi je ne puis absolument pas passer la main. Le défaut de trouver un être qui n'ait pas cette écorce de grès, vous fait peiner à sa recherche, et à force de tâter des mains pour éprouver, quel délice d'en rencontrer enfin qui soient douces.

From "Sainte-Marie-des-Fleurs," by RENÉ BOYLESVE.

RESULT OF THE SEPTEMBER COMPETITION.

The prize is awarded to "Myosotis." (Will "Myosotis" kindly forward name and address for publication?)

First Class.—Opaline, Tilda, St. Cecilia, Enzie, West Harton, Rennes, Colenso, Æneas, Waterfoot, E. M. T., Kathleen, T. V. D., Tim, Elucammie, Clapham, St. Mungo, Signorinetta, Box, Alberta, Madge, Number 4, Mycorhiza, Browning, Lyndhurst, Nylmat, Rial, S. S., Nanuie, Mayde Margaret, Scixio, Damocles, G. C. E.

Second Class.—Graf, Amherst, Alaric, Janet, Minna Troil, Max, Corona, Augustus, Cactus, Kit, Midge.

The name and address of "Jonenri," the winner of last month's competition, are:—Mr. J. H. Fraser, 15 Thirlestane Road, Edinburgh.

REPORT.

Not many really good translations were sent in this time. Excessive literalness of rendering was the dominant fault. Two words in particular were mistranslated owing to this literalness. These were *sursaut* and *réunion*. The latter simply means "meeting;" the former, more often used of a sudden awakening from sleep, means "shock."

PRIZE TRANSLATION.

The English have this peculiarity, the mechanism for communication between the organs of thought and the organs of action is, by nature, imperfect. The impressions received from the outer world are reproduced in the nerves and in the brain less swiftly and less accurately than among other races. The reaction of the nerves, of the brain, even of the very ideas, is more tardily felt in the mechanism controlled by the will. With the English, sensations make no impression or only produce a very slow reaction. The ease with which duelling was abolished, not only in society, but also in the army, furnishes a clear proof of the native impassivity of the English.

The provocation consequent on an insult was more slowly excited in the English than among other nations. To the same cause may be attributed the fact that, in a country where the aggrieved masses have absolute liberty to meet and to combine, a policeman's uplifted baton is sufficient to quell any disorder. But we must not err on this point. This phlegm must not be confounded with that inertia produced in other races by lack of vigour and of energy in the will power. On the contrary, with the English, the will is all the stronger and the more effective. It has greater liberty to pursue constantly its determined course. No trivial accident excites or distracts the will. No sidelight allures it from the direct road. The will is a spring which works with perfect regularity, embedded in the soft wadding of an insensibility which dulls all shocks from the outer world.

"MYOSOTIS."

TWO INTERESTING VOLUMES.

Mosses and Liverworts. By T. H. Russell, F.L.S. (*Sampson Low, Marston, and Co.*)

The study of such inconspicuous plants as mosses has hitherto been much neglected by those who, while not able to take up the study of botany in a minutely technical sense, would yet welcome an introduction sufficiently detailed to afford a practical working acquaintance with the types of such plants as are met with in educational or field-club rambles. Mr. Russell's book affords the best example of such yet issued, and successfully fills the gap between such monumental works as Dr. Braithwaite's and the bare and unattractive catalogues given from time to time in the transactions of local natural history societies. Only a writer of Mr. Russell's wide and sympathetic knowledge could have simplified his difficult task so admirably. Beginning with the usual places in which to look for his types, he describes in a lucid style the structure and functions of the various parts of the little plants, and adds valuable and up-to-date information as to collecting and preserving for microscopic examination and reference. The illustrations are of particular clearness and value, without being overloaded with detail, and technicalities are reduced to a minimum. One feature of great interest to students of modern botany consists in the fact that the author does not hesitate to break down the conventional line of demarcation between flowering and so-called flowerless plants, and boldly uses the terms customary in describing the higher plants with reference to the organs which discharge the same functions in these more lowly types. Altogether this is a book to be warmly recommended for addition to the libraries of secondary and high schools and local field-clubs.

The Teaching of History in Girls' Schools in North and Central Germany: A Report by Eva Dodge, M.A. (*Manchester University Press.*)

Here we have yet another volume recounting the experiences of a Gilchrist travelling student, and one from which all history teachers in this country can learn much that will be practically helpful. Miss Dodge describes the history work in the elementary and higher schools, and gives actual outlines of history lessons, as well as the *Lehrplan* of each centre which she visited. There is, of course, much strenuous reality about it all, and one of the most interesting features about the work is the way in which, by means of adroit leading questions, history is used to strengthen the judgment and the moral fibre of the pupils.

NATURE NOTES FOR THE MONTH—OCTOBER.

BY W. FRANCIS RANKINE.

GRAY, misty dawns and chilling eventides introduce a note of despondency into October days. The verdure of summer foliage has passed away; the feathered migrants have departed, and the insect pageant is over. Thus the year glides on, while nature gradually assumes the quiet tints of browns and grays that make the winter landscape beautiful in its solitude. Yet before this is realised a burst of fiery colour is spread over the woodland—a warmth of tints that lights up the hillsides—the departing glory of the year. There is a note of triumph in this colour display, and it is difficult to believe that it is the outward sign of rapid decay. The tree gradually separates its system from the leaf by means of a cork layer in the base of the leaf-stalk. The function of the leaf is arrested, and the tissue matter is decomposed; the chlorophyll matter is oxidised, and thus the brilliant hues of autumnal tints are caused by the rusting of the leaf-cells. After leaf change comes leaf fall, and this is accelerated by frost and wind; noiselessly the leaves fall to the ground below, soon to be ruthlessly driven hither and thither by the roaring winter gales.

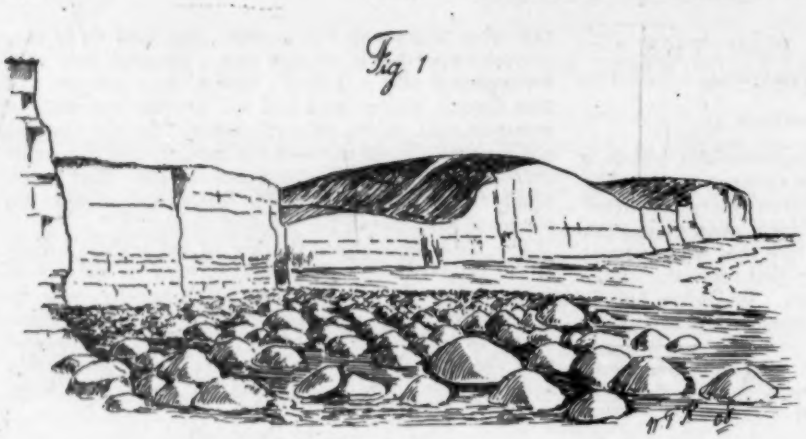
There is desolation in the woodland glades; the paths are littered with dank leaves, and apparently there is little of wild life to be noticed. Yet near the hazel copse the note of the nuthatch is to be heard, and on the ridged bark of the oak trees the relics of its feastings are to be seen. It is difficult, however, to obtain a view of this ingenious bird in the act of cracking the hazel nut, which it has carefully wedged into a fissure in the bark. If such a fissure be examined, it will be found that the inner sides are quite smooth, suggesting that the nuthatch uses the same crevice many times in its feeding. At the base of the tree are many fragments of shells, and with careful searching it will not be difficult to discover an unopened nut which exhibits on its exterior the mark left by the bird's beak. Open it, and the reason why it has been discarded is evident. It is empty, probably on account of the ravages of the nut weevil. The nest of the nuthatch indicates that it is well versed in woodcraft; it often selects a hole in the trunk of a tree, and then proceeds to plaster up the entrance with mud or clay, leaving an aperture just large enough for entrance. In bird life generally the social instinct displayed throughout the colder months of the year presents an interesting study. The chaffinches in particular gather themselves into flocks, and repair to feeding-grounds; this gregarious habit in the fall of the year is evidently directed for the securing of sufficient food. Even the goldfinches form small societies for their descent on thistle patches; and the bullfinch, which is occasionally observed throughout the summer months, may be seen in select companies working their way through the wood. Then, again, the rooks often betake themselves to winter quarters, especially if there are pine woods in the vicinity. These frequently gather themselves from miles around into one large winter colony, visiting day by day their old feeding-grounds. In this movement is exhibited the most elementary form of migration. In our gardens there are two welcome visitors which make their appearance—namely, the robin and the blue tit. Their confidence is strengthened by providing them with suitable food; and while the robin is content with crumbs, the blue tit is very partial to cocoa-nut or suet diet. Suspend half of a cocoa-nut so that it is in full view of your window, and this elegant, blue-crested bird will provide you with an entertainment in quaint gymnastics. In early spring place a few nesting-boxes in the garden, and it is more than likely that the tit which has accepted your hospitality through the winter will condescend to take up residence with you in the breeding season.

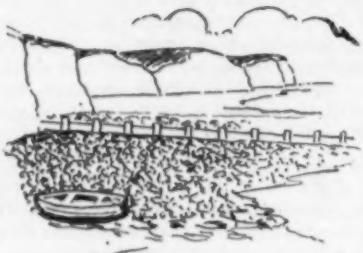
The most conspicuous feature of the leafless hedges is the brightly-coloured fruits that hang in festoons of withering stems; of these the black bryony, with its egg-shaped, orange-coloured berries, is the most noticeable. In some counties the old farm-carters considered that the root of this plant imparted a glossiness to the coats of their horses, and accordingly mixed it with the corn in the stall.

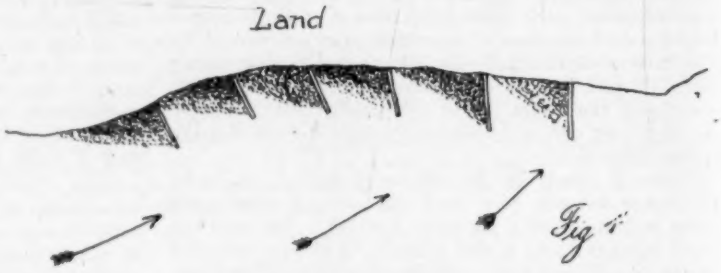
Marine Erosion.

The subject of physical forces does not command the attention in nature study which it deserves. This in many instances is due to misconception of the policy of nature teaching, and in other cases to the fetish which is unnecessarily attached to flower and insect study. The study of the rocks, their structure and composition, and the physical agents which mould them, move them, and generally control them, should find a first place in every well-appointed nature scheme. Such a study must essentially make for a broadening of the basis of nature work, and will do much to remove the extravagant and often useless ideas of nature study which now and then make themselves apparent. Naturally the work is closely related to physical geography—a fact which emphasises the great value of nature study as a correlative medium.

The destruction wrought by the sea on our coasts is very obvious, and in consequence our shores are gradually receding; the rate of destruction depends on the nature of the rock and on the force of the waves as controlled by tidal force and winds. Thus, on the eastern shores of England, where the cliffs are mostly clays and sands, the annual rate of destruction is enormous, and consequently many towns are brought face to face with a serious problem. Breakwaters and groynes are formed, and where possible the constructive agencies of the sea are taken advantage of. However, there are many minor yet important factors which depend on position—namely, offset currents that are determined by headlands and rocks—with the result that the full force of a race stream is directed on to the coast line. Thus it is that our island presents on the map a series of capes and bays, headlands and gulfs, all of which are explicable by means of geological facts and marine erosion. Yet, however durable the rock—even the granites of Cornwall gradually give way to the sea—the action of the waves wears down the coast line. Fig. 1 illustrates in a typical way how erosion proceeds; in the foreground is seen a boulder-strewn shore known as the erosion plane. These boulders have been formed by continuous action of the waves, and these to a certain extent shield the cliffs from further destruction. They form a temporary guard. The boulders are formed of chalk, stratified here and there with flint layers, and these latter are gradually worn into pebbles; these on account of their weight and hardness are borne on the waves to form a beach, while the rounded masses gradually wear down to a fine consistency. Fig. 2 shows more clearly how the destruction of the cliff face is carried on; the base of the unprotected chalk is gradually eaten out by the







waves, and the rains of autumn, followed by the frosts of winter, cause a subsidence. The beach below is then covered with thousands of tons of débris, and the result is consequently as shown in the first figure—namely, a rock-strewn shore. Year by year the destructive force works on till the tidal currents have carried the débris some miles along the coast. Naturally such destruction is a menace to many a watering-place, and in consequence artificial methods are taken advantage of in order to stay the erosive agents. Yet the sea is not to be denied in its mission, and such resources often lead to increased destruction to the shores in the vicinity. Fig. 3 shows a typical groyne set as a trap, as it were, in order to catch the shingle and pebbles cast up by the tide. The result is obvious; the burden of the waves is thrown ashore, and the shore currents set in with redoubled force and so carve out the cliffs beyond. In Fig. 1 it is observed that the cliffs are indented, and this is explained by the fact that the breakwater as shown in Fig. 3 has thrown the full force of the current to the eastward. Fig. 4 gives a plan of a series of groynes employed for the purpose of beach forming; the arrows indicate the direction of the tidal wave, and the shaded masses demonstrate how the shingle and pebbles are entrapped. This plan applies particularly to the unprotected Channel watering-resorts, and by means of these groynes it has been found possible to gain on the sea. This is true, yet the tidal wave curves shorewards immediately it passes the last groyne, and the consequence is that cliffs to the eastward are subjected to a greater erosive force than they would experience naturally.

Idiosyncrasies of currents often lead to the formation of natural beaches, and these form in their turn natural breakwaters; Chesil Beach and Hurst Point may be quoted as instances. However, much depends on the rock structure of the coast, and the tidal force to which they are subjected. It is an interesting occupation to classify in a rough way the pebbles which compose the beaches of our Channel shores; there is an overwhelming majority of flints, which bear witness to the destruction of an enormous amount of chalk from which they have been extracted. Here and there are granites, diorites, syenites, quartz, and sandstones, which in the course of years have come up from the westward. This testimony of the rocks is a great object lesson in marine erosion. On the face of matters it seems quite out of place to mention the gravel deposits that cap some of the older hills in the southern counties, yet in them we find a store of pebbles which owe their rounded forms to marine action. They take us back in thought to the times when seas now unknown carried on a work similar to that now progressing on our coast line. Many gravel deposits, of course, are due to river action, yet in these it is not difficult to detect pebbles that have been disturbed from old beaches by fluvial agency.

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Words by SIR WALTER SCOTT.

A HUNTING SONG.

(TWO PARTS.)

Music by C. E. PARKINSON.

Lightly.
pp
cres.
f
dim.
Allegretto.
1. Wa - ken, lords and la - dies gay! On the moun - tain dawns the day; All the jol - ly
1. Wa - ken, lords and la - dies gay! On the moun - tain dawns the day; All the jol - ly
mf
chase is here, With hawk and horse and hunt - ing spear! Hounds are in their cou - ples yell - ing,
chase is here, With hawk and horse and hunt - ing spear! Hounds are in their cou - ples yell - ing,
Brightly.
mf
Hawks are whist - ling, horns are knell - ing; Mer - ri - ly, mer - ri - ly, min - gle they, . . Wa - ken, lords and
Hawks are whist - ling, horns are knell - ing; Mer - ri - ly, mer - ri - ly, min - gle they, . . Wa - ken, lords and
mf marcato.

la - dies gay. Mer - ri-ly, mer - ri-ly min - gle they, . . Wa - ken, lords and la - dies gay.
la - dies gay. Mer - ri-ly, mer - ri-ly min - gle they, . . Wa - ken, lords and la - dies gay.
f mar ato.
After 1st and 2nd Verses.
After 3rd Verse.
mp
ff

2. Waken, lords and ladies gay!
To the greenwood haste away;
We can show you where he lies,
Fleet of foot and tall of size.
We can show the marks he made
Where the oak his antlers frayed.
You shall see him brought to bay—
"Waken, lords and ladies gay!"

3. Louder, louder chant the lay,
Waken, lords and ladies gay!
Tell them, youth and mirth and glee
Run a course as well as we.
Time, stern huntsman! who can baulk,
Staunch as hound, and fleet as hawk?
Think of this, and rise with day,
Gentle lords and ladies gay!

TRAINING FOR CITIZENSHIP IN THE ELEMENTARY SCHOOL.

BY T. G. TIBBEY, B.A.

II.

IN the previous article it was suggested that, whilst in every way desirable that children should leave even the elementary school with some knowledge of the rights and duties which will later be theirs as citizens, this end is not effectively attained by a series of lessons on "civics" at the end of the school course, having little or no relation to other elements in the curriculum. Such knowledge as is necessary, together with the right spirit that is essential, should be implanted rather as a constituent of the general work, a guiding element directing the choice of lessons in many subjects rather than material for a series of lessons at the end.

One naturally turns to history as the subject most likely to provide matter to such end, to take advantage of which, however, it is necessary to turn from the conventional emphasis upon wars, treaties, and inter-relations of sovereigns, and place it upon the more social elements. Thus the dynastic and baronial struggles of the Norman period may give place to some simple explanation of the influence of the Normans upon the language, social life, and trade of the country. The thirteenth century may be treated as witnessing the coming of the Friars, the rising importance of towns and merchants, and the genesis of Parliament, leading on to the conditions of life and work in the fourteenth century, the Black Plague and its consequences, and the part of Wycliff and the Lollards, not neglecting mention of Chaucer and some of his tales as a related English topic. Mrs. Green in her *Town Life in the Fifteenth Century* illustrates conditions which might well receive more notice than they do in our school histories, and some simple stories, which would tend to a better comprehension of the significance of present conditions of town life. With the Tudor era we reach a period rich in material for the inspiration of national ideals: the social life of the time is better known than before, great books were being written, manufactures and commerce were increasing, whilst sectional interests began to give place to national, and England first became clearly conscious of oversea possibilities. And so the tale may continue. The battles of the Civil War, the nice distinctions between the Petition of Right, the Clarendon Code, and the Bill of Rights, with the intricacies of the wars of the eighteenth century, may give place to some account of changes in commerce and manufactures, in the growth of towns and in areas of population, in means of communication, in social life and customs. The contrast in any of these matters between conditions in 1750 and the present day will open up many interesting questions which the intelligent lad of thirteen will be ready to consider.

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Attention to such matters may mean that some subjects, often included under what is vaguely known as "the leading events in English history," may receive but scant attention. It does not follow, however, that they shall go unmentioned. Rather the question is one of emphasis. From the above topics a selection can be made, some simple knowledge of which will have more vital relations to present-day problems than those other matters. Nor will wars be excluded, but attention will centre rather upon their social results, for good or for ill, than upon their often trivial causes. It is often urged that children—and boys especially—enjoy hearing of the fighting and adventure incident to wars. Granted; yet they are rarely so treated in schools as to bring out their adventurous features. We are apt to leave these rather to the writers of boys' books, who can portray them better than we, whilst plenty of interest and adventure can be found in narratives of town life and growing trade rightly treated. Local history, though much talked about, is often neglected, but the man who knows something of the past of his town is more likely to take an intelligent interest in its present and future welfare.

Another consideration arises: no man can take an intelligent interest in present-day questions who does not know something of the salient facts of European history and of the growth of our Colonies. To learn how these latter are governed, without some knowledge of how they have come to be, is of slight value. Peaceful intercourse, colonisation, and wars have all played their parts. The wars of the eighteenth century centre for us around the colonial rivalry of England and France; whilst the Franco-Prussian War, with its resulting unity of Germany, has had significant effects upon present-day conditions. Yet not less significant have been the effects upon these of changed conditions of communication; and some simple account of early European trade-routes, and of the search for new, with the consequent discovery of the unknown world, with some knowledge of the gradual perfecting of means of locomotion and far-away speech, will prove invaluable where time permits. Here, however, we are entering the sister subject, and the schemes of historical and topographical geography in "Suggestions for Teachers" (Appendix III., pp. 117, 118) offer a bewildering variety of topics. How and why towns grow and industries develop and die away or remove their location, the importance of means of communication and of docks and harbours, are matters which, vitally affecting as they do the interests of the citizen, may yet in broad outline be brought within the comprehension of the child, might well receive more emphasis than they commonly do, and would be received with at least equal, if not greater, interest than much of the matter now taught under this head.

Again, much that would be included under a course of lessons in hygiene can hardly be effectively treated without some civic reference. You cannot adequately deal with the subject of cleanliness without notice of the need of clean streets and prompt removal of refuse; nor with the need of pure water without reference to the cheapness and purity of its supply; nor with the need of fresh air without attention to the evils of overcrowding, of narrow streets, of the value of parks and open spaces; nor with the need of pure food without notice of the danger of adulteration and its prevention. Under modern conditions individual health tends to become a matter of public concern, and no adequate scheme of lessons in hygiene can be planned which does not take cognisance of this social factor. All these corollaries are essentially civic matters of which the future citizen should have some knowledge, and in which he should take some interest, and both will spring for the child from connection with matters with which he comes into daily contact.

From such topics as these, coming immediately within the range of the pupils' observation and interest, simple early lessons on civic matters are often effectively given. To the town child the fire brigade, the police force, the post office, markets, docks, street cleansing are things he knows and partly understands; with many of the details he may be more practically conversant than his teacher. Hence quite early in the school course lessons on such local activities can be given; and when essays come to be written, these form excellent topics for the purpose. From these also can develop later some knowledge of the salient features of local government. Yet, since the subject aims at enabling the future citizen to understand better the conditions under which he lives, and the lessons must necessarily develop out of present environment, no one scheme of lessons and no one text-book can be drawn up equally fitted for all schools. There needs be some differentiation of lessons between the town and country boy, the inland and sea-coast dweller, and between boys and girls. Whilst for the former a few graphic lessons on the merchant and craft gilds would be invaluable, the girls might appreciate better a sister series dealing with women's work, home conditions, and home industries in early days, which would correlate well with lessons in domestic subjects.

But it may be asked in conclusion where, under such a scheme, comes knowledge of the functions of the national government of King, Lords, and Commons, and of the various Government departments. To which it may be replied that much of this will have sprung naturally from consideration of the subjects suggested, and can be brought together if desired by a short course of lessons towards the end of the school course. But much of what is treated under these heads in the ordinary text-books on "Citizenship" belongs to a later period of the child's development than the leaving age of the elementary school, and should form part of the continuation school work, for which indeed the earlier courses in civics were outlined and the earlier text-books written. And if it be urged that the subject is often neglected in the continuation schools in favour of others of apparently greater immediate importance, we may reply that a carefully-chosen course of lessons in the elementary school somewhat on the lines suggested might prove the best means of creating an interest which would lead to a later continuance of the subject.

Finally, an essential part of citizenship is conduct, and no instruction in the knowledge which shall guide civic conduct will be valuable unless it be suffused with the social ideal, and the many opportunities which the course of school routine and the child's development offer for giving this play must be seized. Such practical applications of social ethics is largely a matter of good school discipline, but is also closely connected, on the one hand, with the moral and religious instruction, on the other with the games and recreational activities of the school. Indeed, in its widest connotation, the whole of school life is but a component part of training for citizenship.

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The Value of Stories.

Interest.—The very fact that stories are so popular amongst children of all ages (including those in old age) proves that they satisfy some innate instinct, and that therefore interest will be roused. In this way joy is added to life, and that is in itself a good thing.

Imagination.—One great function of the story is, of course, the development of the imagination, the power which takes us out of our immediate material environment, reveals a new world of thought and feeling, and gives us a new outlook on life. "Properly directed," says Miss Dodd, "imagination brings out all the noble qualities of our nature, strengthens the character, and adds a charm to existence."

Sympathy and Foresight.—Sympathy is one of the moral products of a rich imagination. Children are naturally self-centred, and it is good for them to attain that vision of the sufferings and joys of others which alone can prompt them to render sympathy and help.

Foresight, too—that quality so lacking in most of us—may be considered a practical outcome of a developed imagination; the power to throw one's self into a future period and condition of life, and so to guide one's life accordingly.

Ideals.—Well-chosen stories portray to children every variety of ideal in life and character which, as we "live by admiration," must unconsciously serve to mould their aspirations and inspire right action later on. "The child," says Felix Adler, "gains much, for his ideals and wishes will spiritualise in time, and the idealising tendency remains for ever."

Reason and Judgment are constantly brought to bear on problems of life and character, and nowhere do we need "a right judgment in all things" so much as in the moral world.

Language Training, Literature, and History.—Stories are, as we have previously seen, one of the foundations of language training; they form the natural beginnings of literature, and, as the "Suggestions" admirably point out, they form an invaluable introduction to history and also to geography.

General Information.—Stories which are consciously of an "improving" nature or merely instructive are not particularly interesting; but children do gain from even imaginative stories an enormous amount of general information which is most useful, especially to those of a narrow social environment.

Illustration.—One useful function of stories is that of illustrating points in other lessons. Those of us who have sat through many sermons will remember the pleasant recalling of our vanishing interest caused by the introduction of some little story illustrating the point we had perhaps otherwise missed.

We have dwelt with special emphasis upon the educational value of stories, first, because it is so important not only to have, but also to demonstrate, the clearest realisation of the aims underlying all we do in these things; and also because we fear that stories are still not nearly such an integral part of the school work as they should be in many infants' schools, but perhaps especially in the lower classes of our senior schools. Indeed, we have known enthusiastic infants' teachers tempted to tell to their children stories which were better postponed, but which they have feared the children otherwise would never hear. Of course it is true that stories are often found in reading-books, but their life and interest must be lessened when the child has to grapple at the same time with the mechanical difficulties of learning both the form and the meaning of individual words.

The Choice of Stories.

We remember a teacher who knew a beautiful logical sequence of six objects which could be made out of the cubes of Froebel's Gift III. The children had a weekly "lesson," and always did the same series until one day some one else came to the rescue. Now similarly, if one sits down in front of a class and trusts to the inspiration of the moment to suggest a story, it is surprising how few will occur to one, and those few always the same. It is true that those few will be old favourites, and children love old friends in the story world. But is it worth while to tell the same stories over and over again when there is such a perfect wealth at our command? If the stories are to yield their full value in the curriculum, it is of the utmost importance that they should be first well chosen, and then well planned, and then well told.

The Choice of Stories Generally.—Stories are of many and varied types, but for our purpose we may broadly classify them into:—

1. Stories of everyday life.
2. Fairy stories.
3. Nature stories.
4. Historical tales, sacred legends, etc.

(The Bible stories are not included here, but they are, of course, incomparable from many points of view, apart from the doctrinal.)

(To be continued.)

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Section 3. Co-operation in labour—army, navy, police, firemen, capital and labour, trades unions. Study specially any local industries to show how various kinds of labour co-operate to produce a special result. With the infants, take specially the building of a house for this purpose.

Section 4. Interdependence of nations—for example, import and export. Even little children are able to understand the fundamental principle of this, if taught simply and in connection with local conditions.

Mottoes.

1. "Then come the wild weather, come sleet or come snow,
   We'll stand by each other, however it blow."
2. "Unity is strength."

Bible Stories.

The building of the Temple (1 Kings vi., vii., viii.).

The rebuilding of Jerusalem and the Temple (Ezra and Nehemiah).

The life of the early Christians (Acts ii. 41–47; iv. 31–37).

Story of the Tower of Babel (Gen. xi.)—showing confusion arising from being unable to co-operate.

Other Literature.

1. Story of King Arthur and his Knights of the Round Table (symbol of unity).
2. Story of Perseus (showing how Perseus could not accomplish his task without help).
3. Nelson and his famous motto (good leaders must have men who will work with them).
4. How we got Magna Charta (through the co-operation of the barons).
5. The old fable of the bundle of sticks (value of unity).
6. The old fairy tale of the old woman and her pig.

Nature Study.

Plant Life.—The work of the soil. The work of the sun. The work of the air. The work of the rain. The work of the snow and frost. Study these in relation to plant life, and show how the perfect fruit is only obtained by co-operation of all these. Study of autumn fruits continued—apples, plums, nuts, berries, etc.

Animal Life.—Study of animals that live in communities—beavers, rabbits, bees, ants, etc.

Literature in connection with Nature Study.

Drudgery (*Earth's Many Voices*).

Ruskin's King of the Golden River (*Books for Bairns*, 1d.).

The Golden Apples (*Tanglewood Tales*).

The Light of Life (*Parables from Nature*).

Myths of Phaeton, Iris, etc. (*Nature Myths*).

The Wind in a Frolic (Wordsworth).

The Fruit Tree (Björnson).

Kindergarten Occupations.

Week 1. A great feature should be made of co-operative work. In the building, stick-laying, drawing, paper-cutting, clay modelling, and painting, etc., the children should combine forces to produce larger and better results than could be obtainable by the individual.

Week 2. Brushwork—sprays of blackberries, nuts, hips and haws (juniors); apple, pear, plum (infants).

Clay modelling—apple, pear, plum (infants); apple, pear, plum, with leaves (juniors).

Paper-cutting—picture to illustrate wind and its work.

Drawing—bees, ants, hexagonal cells, honeycomb designing in hexagons (juniors); beehive, jar for honey, various autumn fruits in colour (infants).

Week 3. For juniors connect all occupations with local industries—clay modelling with potteries, weaving, etc., with mills, woodwork with shipping. For infants connect especially those that are concerned with a house—for example, building, furniture making, etc.

Week 4. Connect with import and export in the same way—for example, *shipbuilding*. Brushwork—seaweed, a sea scene; sandwork—the beach; clay modelling—a lighthouse, shells; drawing—a ship, etc.

Hymns.

Little drops of water.

Work for all; If you cannot on the ocean; We must work and pray (*Hymns and Choral Songs* mentioned last month).

Games.

Ring games (the ring symbolises the unity and co-operation of the class).

The Raindrops (K. Moore's *Child's Song and Game Book*).

Tradesmen (K. Moore's *Child's Song and Game Book*).

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"*Why flowers and the grain grow.*"

1. O beautiful flowers, and ripe yellow grain,
   What makes you grow thickly o'er woodland and plain?
2. Why! I am astonished that you should not know
   That I am the sun, and I make them grow.
3. Well! I never did hear such a curious story,
   For I am the rain, and I claim all the glory.
4. You would find what the sun and the rain were both worth
   If it were not for my part. Why! I am the earth.
5. Well! well! I don't think I shall quarrel or care,
   For every one knows it is due to the air.
6. Ha! ha!—I can't help it—the air indeed!
   Pray, what would you do without me, the seed?
7. Why! why! what a tumult! Stop quarrelling so.
   Without *every one* of you nothing can grow.
8. Why, of course, 'tis the union of earth, seed, and air,
   With the rain and the sun and the Lord's tender care.

Altogether

Yes, we'll all work together,
And lovingly too,
For each has a work
That no other can do.

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MORAL INSTRUCTION AND TRAINING IN SCHOOLS.*

BY JOHN GUNN, M.A., D.SC.

IT was in the issue of "Special Reports" that Professor Sadler first took his place as an educator of educationists in this country, and our first feeling on receiving these two volumes is one of satisfaction that in his present position—one of "greater freedom" if not of "less responsibility"—he has found time to enrich our modern literature of education by this unofficial "Special Report." There is no one who is better fitted, by natural endowment and by experience, to conduct such an inquiry as that which is here represented, to collect evidence from the right quarter—where opinions are not mere theories, but the outcome of experience and experiment—to omit the irrelevant and emphasise what is of permanent value, and to review the whole with a sane and suggestive commentary.

During this, the opening decade of the new century, no topic has engrossed more attention than education. From the so-called Imperial Parliament to the most minute body entrusted with powers of local government, our legislators and administrators have laboured with more or less success to settle the practical problems of education. The output of literature on the same subject, constructive and controversial, has been unprecedented. The number of fads which have been exploited, and of genuine reforms which have been effected, renders it difficult at times for the practical teacher to know just where he stands, or whether he really stands in the normal upright posture or not. These things have their disadvantages, and yet they are preferable to the massive indifference or the veiled hostility towards education which marked some previous decades of our history.

If we leave aside matters of educational administration, and consider only the movements which have sprung from interest in education itself, we see that each succeeding wave has reached a higher level than those which in their turn broke with more or less noise and foam upon the strand. We need only think of the various ripples of criticism, and then of reform in the curriculum, which first broke the stagnation of the "Code" *régime*—reform of the drawing syllabus, the introduction of a rational nature study, and the like. A much bigger and more significant wave was that whose crest was the inquiry into the physical condition of school children, and whose ultimate force and influence we cannot yet estimate with any finality. This new wave, the question of the moral influence of the school, suggests the manifestation of a still higher energy, and promises to reach a yet higher level in educational thought.

Or to put it in another way, educational thinking has been proceeding slowly from the obvious and superficial to the essential and fundamental in education. And in this study of the ethical possibilities of the school we have an attempt to consider what is absolutely basal and central in the conception of education.

"The influence of education upon conduct and character is the subject discussed in this book," says the editor in his opening sentence. It is a commonplace of educational theory that education is an ethical process, and that its outcome is the development of character. Yet this inquiry is probably the first serious practical attempt, in this country at least, to bring consciously to the front this ethical aspect of education, and to ascertain how far and by what means our schools can mould the character of the pupils.

To say this is not to imply that teachers have ignored moral training, or even moral instruction. One need not quote the great teachers whose names are household words, and whose moral influence has spread far beyond the limits of their own schools. Those who know our common schools best will be the most ready to proclaim that the obscure rank and file of the profession are in no way unworthy colleagues of those whom fame has, sometimes capriciously, singled out for distinction. If we saw any reason to suspect that this inquiry presupposed a general failure on the part of our schools and schoolmasters to realise their high responsibility, we should deem it unworthy of serious discussion.

We accept, however, without reserve the editor's statement that the inquiry was "undertaken with the purpose of gathering information as to the methods of moral instruction and training now in use in different countries," and that the report records "the judgment of experienced teachers and others as to the efficacy of the various means by which schools may bear part in the task of quickening and defining moral ideals, and of strengthening their influence upon individual conduct and upon national life." Unlike the wave of interest in the physical welfare of children, this movement arises not from any obvious failure on the part of the school, but from a natural and laudable desire to take stock of our present position, and to consider possible improvements in our procedure.

"The evidence shows," says Professor Sadler, "that in all the countries from which we have received reports, those who have special knowledge of social needs regard the moral influence which may be exerted by the schools as being of primary importance to national well-being." This is all for good. Teachers are sometimes impatient of the impossible demands that are made upon the school, which is, after all, only one among the many influences active in developing the character of the pupil. But there is no more certain means of increasing the influence of the school than a general feeling that the school is important. The more consideration it receives, the greater is its power for good. Hence an increase in the demands upon it tends to increase its power of meeting those demands, by securing the co-operation of the home and of other social educative influences.

Unanimity, however, is by no means the most prominent characteristic in the opinions set forth in this report. On several important points there is distinct and apparently irreconcilable difference, both among the members of the Committee and among those whose views are recorded in the report. This difference is clearly seen in dealing with the question of the relation between religious and moral teaching. On the one side we have the view that the two are quite inseparable; on the other, that morality is independent of religion,

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and ought to be treated as such; while there is a large body of opinion, especially of English opinion, which inclines to a medium position, regarding the two as fundamentally connected, but in a large degree capable of separate treatment, and, in view of differences of creed and dogma, preferring this partial separation as a practical measure.

There is in some quarters a certain suspicion of this new interest in moral teaching, on the ground that the movement is really hostile to religion, and springs from a design to substitute morality as the basis of character-building. A perusal of the report is distinctly reassuring on this ground, and shows the practical unanimity of our teachers in regarding religious teaching as being indispensable to education. And while we have not yet been able to consider adequately the evidence from other countries, two things have struck us as very significant in this connection. The first is that in America there is evidence of a growing feeling that the exclusion of the Bible from the common school is an educational loss—a truth so obvious that one can only wonder at its tardy recognition. The second is that, however complete and logical the French *cours de morale* may seem when we look through the syllabus, when an attempt is made to formulate the foundation of it all we reach nothing more solid than this formula—"(*a*) the high worth of human nature, with its power of thought, its moral consciousness, and its capacity for intellectual generalisation; (*b*) the high worth of human society," which is a fairly complete *reductio* of the attempt to dispense with religion in education, unless we import into the term "high worth" a meaning unwarranted by the assumptions of the theory.

In this connection we should like to draw special attention to the paper by Professor Muirhead on "The Religious Foundation of Moral Instruction." He remarks that if this investigation had taken place a generation ago, "the purely secular view would have found much more numerous and pronounced supporters," and he gives an able analysis of the pro-religious trend of thought at the present day. This is a factor in educational thought which must be reckoned with when solutions of the so-called "religious difficulty" are promulgated, and when politicians talk glibly of "secularising the schools" in the interests of political consistency. The evidence in this report merely confirms what is already well known to all who are familiar with school work—namely, the undoubted primacy of the Bible among educative agencies.

Another important question which has evoked sharp difference of opinion is that of the relative value of direct and systematic moral instruction. The value of moral *training* is admitted by all; the value of indirect and informal or occasional moral instruction is also generally acknowledged: it is only when a connected series of moral lessons is in question that this difference of opinion emerges.

In this debate the leader for the affirmative, very naturally, is Dr. F. H. Hayward, who contributes a singularly temperate paper on "The Need for Improved Moral Instruction," and states his case with an unusual absence of the polemical element. Equally naturally, the negative position is advanced by Professor J. J. Findlay, who indicates his line of defence in the title of his paper, "The Growth of Moral Ideas in Children," and rests his opposition to specific moral teaching upon an interpretation of child-nature which many careful students of childhood will be unable to accept.

These two papers are followed by a third from Professor John Adams, on "Precept *versus* Example," which may be taken as an attempt at mediation between the two antagonistic views. His characteristically sane and fundamentally sound position may be summed up in these sentences which we quote: "'Example is better than precept' is a dangerous half-truth: Precept is higher than example, though example is more effective in producing immediate practical results. Precept is necessary to the intelligent application of example."

At the present day this question of the value of direct moral teaching is perhaps the most practical of all the questions discussed in these volumes, but it is too wide and too complicated for adequate expression in a review notice. With the permission of the Editor of this journal, we may find occasion to return to it at some not very distant date. Much of the divergence of opinion is due to a misapprehension of each other's position by the disputants on either side; some of it arises from the different problems which face the teacher according to the class of pupils with whom he has to deal. Yet the subject is of sufficient importance to make it worth while to reach a clear understanding on the matter.

Regarding numerous other points in the inquiry and the evidence, we can only say that the volumes are worthy of careful perusal and repeated study. They deserve a place in every teacher's library, and will prove a mine of information and of suggestion. The publication of such a report, almost synchronising, as it does, with the meeting of the first International Moral Education Congress in London, promises to mark something like a new departure in our educational thought, and possibly in our educational practice.

Voltaire Philosophe. Par Georges Pellissier. (*Paris: Librairie Armand Colin.*)

In this book M. Pellissier deals with Voltaire's opinions on physical and metaphysical questions, religion, morals, and politics. The volume is worthy of M. Pellissier's high reputation as one of the leading French *littérateurs* of the day. The subject has often been treated, but the author of the present work claims as a unique qualification for the task he has undertaken that he has read all Voltaire's literary productions, and slyly remarks that many writers have treated of Voltaire without knowing him well. To those who are likely to criticise the view he takes of Voltaire's opinions, M. Pellissier makes a present of the admission that he himself largely shares them. Nevertheless it would be difficult to find any review of Voltaire's opinions written with the evident fairness and striving after truth which characterise this book. To a large extent Voltaire is allowed to speak for himself, and his editor makes no attempt to conceal the inconsistencies between his utterances at various periods and those divergences between his opinions and his acts which his enemies have fastened upon. Neither does he attempt to hide the scorn that Voltaire felt for the lower classes, and his strong opinions against popular education. M. Pellissier, however, points out that this attitude of the philosopher was due to the fact that the acts of religious intolerance against which he so nobly protested were rendered possible by the fanaticism of the common people in his time. In his endeavour to explain what have been considered inconsistencies in Voltaire, M. Pellissier is interesting and ingenious, but not always convincing. We recommend a perusal of this book to all who desire thoroughly to understand the position the greatest French philosopher of the eighteenth century took to those questions which interest thinking men of all ages.

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THE HERBARTIAN PSYCHOLOGY APPLIED TO EDUCATION.

BY W. MACPHERSON, M.A.

THE primary aim of the following article is to afford to Certificate students some practical guidance in the study of Professor Adams's book on *The Herbartian Psychology*, which is prescribed for the Certificate Examination to be held next December. The subject, however, is one of interest and importance for student-teachers and teachers generally.

It must be premised that the tone of Professor Adams's book is decidedly not suggestive of the examination room. The subject is expounded in no wire-drawn fashion; its logical divisions and development, and the relations of the different chapters to one another and to the whole, are not set forth explicitly, but must be for the most part worked out and inferred by the reader. The student preparing for an examination may complain that this involves him in objectionable mental exertion. Yet Professor Adams has a gift of lightsome humour which cannot but enliven and rejoice his readers. It is the present writer's regrettable duty in this article to superimpose upon the buoyant structure of Professor Adams's work some wire-drawn distinctions and formal divisions which may assist students in the definition of its main outlines.

The subject-matter of the book, apart from the first chapter, which is introductory, may be conveniently grouped and studied under three headings—(1) the Herbartian Psychology, Chapters II., III., IV., VI., VII., and X.; (2) the Herbartian Psychology in relation to the school curriculum, Chapter V.; (3) some Practical Applications, Chapters VIII. and IX.

The Theory of Apperception.

The second chapter of Professor Adams's book, entitled "A Review of Psychologies," is historical, and deals briefly with the theories of Tolstoi, the psycho-physical school, the school of suggestion, Locke, and Froebel. The contrast between the respective positions of Locke and Herbart should here be thought out by the student, and will serve as a link to connect the subject-matter of Chapters II. and III. One of the main questions with which psychology is concerned is, How are ideas formed? According to Locke, the mind gets all its ideas through the senses. In the famous phrase, the mind to him is a *tabula rasa*—a kind of blank sheet of paper—and the senses write, as it were, ideas upon it. For example, by means of our sense of sight we see a red colour, and forthwith (in some mysterious manner) the idea of *red* is imprinted on our consciousness.

This so-called explanation of the origin of our particular ideas is in itself palpably insufficient and erroneous; but it is when Locke endeavours to account for the origin of general and complex ideas that the deficiencies of his theory are most clearly seen. The only explanation to be gathered from him as to how we form such an idea as that of *colour* is that we know the ideas *red*, *blue*, *green*, etc., and that, from such a series of successive ideas, by the working of certain assumed mental powers called "faculties," we pass somehow to the idea of *colour*. On this theory, ideas are merely the passive material on which the mental "faculties" act. Herbart, on the other hand, seems to attribute to ideas a kind of individual life and immortality. The mind has no innate faculties, and its only activity consists in its response to ideas that are presented to it; but the ideas are in themselves vital and active and enduring. By virtue of their activity, ideas which are co-presented in consciousness have the power of relating themselves to one another. For example, when similar ideas find themselves together in consciousness, they combine into a homogeneous whole, and by this combination become more powerful in resisting attempts to drive them out. Every idea that has once risen into consciousness has a certain amount of "presentative activity," is likely to rise again, and has the power of attracting and assimilating to itself other ideas; and the amount of presentative activity is increased every time that the idea rises to full consciousness. Gradually, by the power that ideas possess of combining themselves and forming new complexes, "apperception masses"—groups of kindred or disparate ideas—are formed, and, according to Herbart, our whole intellectual life is spent in forming new apperception masses, and in expanding and modifying old ones. When an idea is presented for the first time, other disparate or similar ideas seek to fuse or to combine themselves with it, and it is on the possibility of such fusion or combination that the place which the new idea will hold in our consciousness depends; the action of the mind upon a new idea is practically determined by the masses of ideas that it already contains. This determining action is what is called "apperception," and it may be defined as the process by which a new element that presents itself to consciousness is appropriated and interpreted in the light of the whole present content of the mind.

This theory involves the implication that a very special power and responsibility belong to the teacher. The development of a pupil's mind is to a large extent in the teacher's hands, since he can control and modify the apperception masses. The way in which an idea is apperceived depends upon the ideas already in the apperceiving mind, and the manner in which they are arranged in that mind; and it lies with the teacher, in presenting a new idea, to bring it into connection with the pupil's apperception masses, in such a way as to make him see that what seems quite new is an extension of what is already in his mind. When something new presents itself to us, it does not stir our interest and arrest our attention unless it is connected with something already known by us. Here we touch upon the bearing that the theory of apperception has upon the theory of attention and interest, which is discussed by Professor Adams in the tenth chapter of his book. Attention is defined broadly as being "the concentration of mental energy on a given object;" and in every case interest is the force which directs attention or determines the point upon which it shall be applied. Now, the interest which we take in an object depends upon the apperception masses that can be brought into relation with it. It is in the teacher's power to control and modify the apperception masses, and if he calls up in a pupil the right masses in relation to a given object he will succeed in arousing the pupil's interest and attention. We must, then, as teachers, seek to interest our pupils if we are to gain their attention; and, speaking broadly, we shall realise this endeavour if, interpreting rightly the past history and present state of the pupil's mind, we rationally connect with his experience the object of our teaching.

(*To be continued.*)

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B. *Presentation.*—The blood is a fluid which is peculiarly adapted for the work it has to carry on. In a human being it forms from a twelfth to a fourteenth part of the weight of the whole body. It contains about 67 per cent. of a yellowish fluid called *plasma*, and 33 per cent. of cells known as *corpuscles*. To a certain extent both the oxygen taken up in the lungs and the carbon dioxide given to the blood by the tissues are held in simple solution, but the greater part of both is held in chemical combination. If carbon dioxide is dissolved in a fluid, the fluid has an acid reaction, but the blood is alkaline, showing that the carbon dioxide is combined with the alkalis in the blood mainly in the plasma of it. The oxygen, on the other hand, enters into loose combination with the hæmoglobin, a coloured substance in the red corpuscles. Hence the quantity of oxygen in the blood does not vary as the pressure, as was shown by Dalton to be the case with a gas dissolving in a liquid. The oxygen absorbed by the corpuscles is converted into an active state, and the application of the test for ozone shows the presence of oxygen in that form. It is very easily abstracted, almost any reducing agent being able to withdraw the oxygen readily from the blood. Hence when the blood circulates among cells which are deficient in oxygen it freely supplies that gas to them.

Strictly speaking, circulation is the process by which the blood is made to move on after it has exchanged its gases with the lungs or tissues. It takes place through vessels, which are called respectively arteries, veins, and capillaries. Of these the arteries are furnished with the thickest walls, as they have to resist the great pressure which is put upon the blood by the heart as it drives the blood forward. The walls of the large veins are fairly thick, though much less so than those of the arteries, and they are commonly supplied with pouch-like valves, especially in the case of those that run among the muscular parts of the body. These valves open only in one direction—namely, that in which the blood should flow in going towards the heart. Owing to this arrangement, the mere contraction of a muscle, or any pressure on the outside of the part, aids the circulation, for the pressure fills the bag-like valve at the farther end of a section of the vein, and causes the blood to run through the valve at the other, which, owing to its disposition, is kept open. The capillaries are minute tubes with extremely thin walls, through which some of the plasma of the blood actually escapes, and which are so thin that there is a free interchange of gases between the blood in the capillaries and the air-sacs of the lungs or the cells of the tissues in which the capillaries are distributed.

The arteries are very elastic and also contractile. These properties are due to their structure, which consists of a single layer of cells, then one of elastic connective tissue; but the chief layer consists of unstriped muscle. Owing to their great elasticity they are able to expand without bursting when the blood is subjected to a sudden increase of pressure by the contraction of the heart; and in recovering their original size they cause a steady pressure, which urges the blood forward more steadily. Their contractility enables them to adjust themselves to the quantity of blood which has to pass through them, and as it is under the control of the nervous system, it enables a modification of the blood supply to be brought about in any special part of the body as occasion may require. For instance, when a gland is in full work the arteries are relaxed so that it receives a much larger supply of blood than when it is at rest So, too, when the body is hot the small arteries that supply the skin are relaxed, and so a larger quantity of blood is brought nearer the surface. This acts in two ways. In the first place, the blood itself can give off its heat by radiation; and in the next, the sweat glands receive a larger supply, and are thrown into a state of greater activity, and the evaporation of the large quantity of moisture which they pour forth on to the surface of the skin uses up a great quantity of heat.

In the case of invertebrate animals the capillary system is not complete, so that the blood flows unconfined in the midst of the tissues themselves, and later on makes its way into the vessels by which it returns to the heart.

Special interest attaches to the heart, as it is the principal organ of circulation, and varies in structure in the different forms of animal life. In such creatures as the earthworm there is a blood-vessel extending the whole length of the back which is contractile, and by its pulsations causes a movement of the blood, though we can hardly say there is a definite circulation.

In the snail the heart consists of two chambers—an auricle and ventricle—separated by some small valves that allow the blood to pass only from the auricle to the ventricle. It is situated near the top of the lung-sac, the walls of which are covered with small vessels in which the blood is aerated, and from which it passes to the auricle, and thence to the ventricle, which drives it over the system. As this heart sends blood over the system and not to the lungs directly, it is called a *systemic* heart.

The cuttle-fish is generally reckoned the highest form of invertebrate, and its heart has two auricles and one ventricle. The latter sends the blood over the system, and on its return course it is collected into veins, which are furnished with hearts that drive the blood through the gills before it reaches the central or systemic heart.

In structure the heart of a fish resembles that of a snail. It is, however, not systemic but pulmonary—that is to say, instead of driving the blood to the system, it receives it from the system, and sends it to the gills to be aerated. After passing through the gills, the blood, which is then in the arterial state, is collected into the aorta, a large artery passing along the back, through which it is distributed to the various organs.

In reptiles and amphibians the heart has two auricles and one ventricle. The right auricle receives venous blood from the body generally, and the left auricle receives arterial blood from the lungs, and these both pour their contents into the one auricle, which forces it to both the lungs and the system. It would at first sight then seem that in the frog the lungs would receive a mixture of venous and arterial blood, as would also the general organs of the body. Careful observation, however, shows that the right auricle contracts a short time before the left, so that the venous blood is sent down to the bottom of the ventricle, while the arterial blood goes into the upper part. As the ventricle resembles a sponge rather than a bag, and as it contracts immediately after it is filled, there is no time for mixture to take place; but the arterial blood is driven out first, and by a peculiar arrangement in the great blood-vessels the first portion of this passes up the carotid artery to the brain. The next part, which is somewhat mixed, passes to the muscles and general organs; while the last part, consisting of venous blood, passes to the lungs and skin, where it undergoes the oxidation it needs.

In the case of reptiles there is a more or less complete partition dividing the ventricle into two, and in the crocodile the division is complete, so that it has two ventricles as well as two auricles; but still the circulation is not complete, for each ventricle gives rise to an aorta, and these communicate one with another shortly after leaving the heart. In warm-blooded vertebrates—the birds and mammals—the circulation is complete, and no blood can return to the same part of the system without travelling through both the pulmonary and systemic circulation. Hence it will be seen that the higher vertebrates really have two hearts, which are placed together for convenience—the one on the right driving the blood to the lungs, and the one on the left sending it to the rest of the body.

The student should buy a sheep's heart at the butcher's, and ask him to cut it so as to leave some of the pipes attached. The shortest and thinnest walled of these lead into the upper parts of the heart—the auricles, so-called because they seem to hang down like small ears. The thick-walled parts of the heart are the ventricles. On pinching these it will soon be seen that on one side the wall is so thin that it can be raised somewhat by pinching; this is the right. The other side is too thick to give way much; that is the left. It will be seen that there is a necessity for the greater thickness on the left side, as that has to overcome a greater resistance in forcing the blood over the greater part of the body than the right has in sending it through the lungs only. If water be sent from a tap through one of the great veins, *venæ cavæ*, leading into the right auricle, it will readily flow out through one of the two thick vessels which seem to rise from the top of the heart. This is the pulmonary artery,

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and is the vessel which leads to the lungs. On attempting to pass water in the contrary direction, it will be found to be impossible, unless there is such a high pressure as to injure the valves. In the same way it may be found that water will pass on the left side in by the pulmonary veins and out by the aorta (which is the tube with the strongest walls), but not in the contrary direction. The auricles should next be cut open, and if the heart is empty it is possible to see right into the ventricles; but if some water be poured in, the valves which divide the auricles from the ventricles will float up in readiness to prevent the return of the water. It will be seen that the one on the right consists of three pointed flaps, hence it is called the *tricuspid* valve; while that on the left consists of two pointed flaps, resembling a bishop's mitre, whence it is called the *mitral* valve. The pouch-like *semilunar* valves which guard the entrance to the pulmonary artery and to the aorta should also be examined, as well as the cords by which the tricuspid and mitral valves are prevented from turning inside out.

C. *Formulation, Association, and Application.*—Having given the matter at such length in the previous section, we trust that the student will find no difficulty in drawing up these sections for himself on the lines of previous notes.

English Literature.

Among the books named for general reading one of the most striking is Scott's *Heart of Midlothian*.

Scott was born in 1771 in the "Old Town" of Edinburgh, close to the spot which he has made the scene of the opening chapters of the above novel. As he showed symptoms of lameness when eighteen months old, he was sent to his grandfather's farm near Melrose. He also spent about a year at Bath with an aunt, with whom he afterwards returned to Edinburgh, where he entered the High School. As a boy he was a great reader, and spent much of his time over Spenser and Shakespeare, and closely studied Percy's *Reliques of Ancient Poetry*. Such a course of reading had a powerful influence in the training of Scott's imagination, especially as it was carried on amid surroundings that brought him into close touch with nature, and with the ruins of castles and abbeys. Scott formed an intense love of nature and a deep reverence for the memorials of the past. The student should read the beautiful chapters in Ruskin's *Fors Clavigera*, in which he deals with the influences that surrounded Scott in his childhood.

The father of Sir Walter Scott was a lawyer of considerable eminence, whose portrait is drawn in *Redgauntlet* under the name of Saunders Fairford, and Scott is simply describing what was intended for his own career when he says: "The whole pleasure of this good, old-fashioned man of method, besides that which he really felt in the discharge of his own daily business, was the hope to see his son attain what in the father's eyes was the proudest of all distinctions—the rank and fame of a well-employed lawyer."

Scott was allowed a choice between the two branches of the legal profession, and he chose the Bar, and after diligent study of Scotch law he was called to the Bar in 1792. In 1797 he married a Miss Carpenter.

The revival of German national life towards the end of the eighteenth century led to an outburst of German literature, and Scott studied it with eagerness. His earliest publication was called *The Chase*, and consisted of the two poems *William and Helen* and *The Wild Huntsman*, which he translated from Bürger. He published several other translations from the German, including Goethe's *Goetz von Berlichingen*. This was published in 1799, the year in which Scott lost his father. The same year, through the influence of the Duke of Buccleuch, he was appointed Sheriff of Selkirkshire, with a salary of £300.

After publishing in 1802 two volumes of "The Minstrelsy of the Scottish Border," Scott produced *The Lay of the Last Minstrel*, his first great original poem. The irregular metre was suggested by Coleridge's *Christabel;* and in the preface to the edition of 1829 Scott acknowledges his indebtedness—"From the singularly irregular structure of the stanzas, and the liberty which it allows the author to adapt the sound to the sense, (*Christabel*) seemed to me exactly suited to such an extravaganza as I meditated on the subject of Gilpin Horner.....and it is to Mr. Coleridge that I am bound to make the acknowledgment due from the pupil to his master."

The other romantic poems—*Don Roderick*, *Rokeby*, *Marmion*, and *The Lady of the Lake*—show Scott's admirable descriptive power, and many passages might be quoted from them to show what a fascination a beautiful scene or a romantic ruin exerted over the writer. But he felt that his poetry, on the whole, would not bear comparison with that of Byron, and he himself wrote in 1821: "I feel the prudence of giving way before the more forcible and powerful genius of Byron." But perhaps there was another reason for giving up poetry. In 1814 Scott completed his first novel, *Waverley*, which at once acquired an immense popularity, and was soon followed by others, which took their general title—"The Waverley Novels"—from the name of the first of the series. These were published anonymously, and it was not till 1827 that Scott declared himself to be the author of them. Up to 1826 Scott seems to have enjoyed the greatest good fortune, but in that year his publishers failed in business, and as he was a partner all his fortune was swallowed up, and his last years were troubled and burdened by the endeavour to secure that none of his creditors should suffer loss. Under such circumstances it is not surprising that his later novels show a decline in power. After an illness of two months he died at Abbotsford in September 1832.

Out of the twenty-seven novels that Scott wrote, twenty are historical, and deal with a great variety of times and countries. It is sometimes urged as an objection to Scott's novels that he introduces too many Scottish words and phrases, and to a Southerner this may seem a serious fault; but at the same time it helps to keep up the local colour in the case of novels of which the scene is laid in Scotland, and most editions give a glossary of the words which are not commonly known. Another fault that is often found with the Waverley Novels is that the reader often has to peruse a large number of pages before he becomes interested in the story. This, however, is not the case with the *Heart of Midlothian;* the vivid description of the Porteous Riots fixes our interest and claims our attention at once. This gives an introduction to Effie Deans, who was urged to escape from prison in the Tolbooth, where she was waiting her trial on the charge of killing her baby. The trial took place later on in accordance with a Scotch law which made the concealment of birth an equivalent of murder. All hope of the defence was based upon the expectation that Jeanie Deans would declare that her sister had spoken to her about her condition before the child was born, but to the surprise of all she declined to assert what was not really a fact, although it seemed so natural that no one would have questioned the statement. The result was that Effie was declared guilty, and the capital sentence was passed on her. But although Jeanie would not go against her conscience to save her sister, she was ready to make any other sacrifice on her sister's behalf, and started off to London to ask the royal pardon for her. The account of her journey thrills with interest. Of course the right people meet in most unexpected ways, but it is the novelist's privilege to make them do so; and, thanks to the help of the Duke of Argyle, Jeanie obtains an interview with Queen Caroline, and the pardon is granted. Staunton, the man who had wronged Effie, found an opportunity to make amends, and after a time spent abroad they returned, and discovered that the child was not really dead, but unfortunately had grown up with robbers, who in a fray with Staunton shot him, leaving Effie indeed a widow and the boy an outcast.

The characters are finely drawn, though perhaps with a little exaggeration in some cases. The noble-hearted Jeanie holds first place among the characters in the book, and indeed we must assign her a very prominent place in the wide range of fiction. Her sister Effie is quite natural in that she awakens very mixed feelings. At first we blame the light, giddy girl, whose conduct is so contrasted with the quiet reserve of Jeanie and with the austere bearing of her father. Then we pity her when we find her in misfortune and the victim of a harsh law. We admire her constancy in persisting in her attachment to Staunton, and feel a little bit vexed that she does not submit to and do more for her father, although we must bear in mind that the obstacles to the reunion were not all raised by her. The father, David Deans, is a fine old character, showing how persecution narrows a man's mind, and instead of convincing him only makes him cling more strongly to his own ideas. He is also a type of those who attach more importance to the shibboleths of form and Church government in which they differ from others than to those common points of duty and Christian charity on which we all agree. The character of the Duke of Argyle is very well portrayed. We see in him a persevering and tactful statesman, firm and unwavering before court opposition, and full of love for his country, especially the northern part of it. At the same time we find him anxious to do all in his power to promote the welfare of the humblest individuals over whom he in any way exercised lordship. The wild, semi-independent condition of the domains of a Scottish chief in the middle of the eighteenth century is well shown towards the end of the book. Reuben Butler is a type of the minister to whose guidance the moral and religious character of Scotsmen owes so much. The book contains a fair sprinkling of humorous points and characters, such as the conceited Mr. Saddletree, whose affected knowledge of the law is matched by his real ignorance and his neglect of his own business.

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